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EXPLANATORY NOTES

for

DEPARTMENT OF AGRICULTURE

BUDGET ESTIMATES

Fiscal Year

1947

CONTENTS

C O N T E N T S

(Volume 3)

Pages

WHITE PINE BLISTER RUST CONTROL

Appropriation Act, 1946		$2,923,867
Anticipated supplemental for additional costs due to the Federal Employees Pay Act of 1945		+270,000
Total anticipated available, 1946		3,193,867
Budget estimate, 1947		7,000,000
Change for 1947:		
Overtime decrease	-93,143	
Increase	+3,899,276	+3,806,133

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
1. Leadership, coordination and technical direction of white pine blister rust control (Entomology and Plant Quarantine)	$443,274	$573,920	$644,200	+$70,280 (1)
2. Blister rust quarantine enforcement (Entomology and Plant Quarantine)	9,814	11,500	11,500	- -
3. Blister rust control operations on the national forests (Forest Service)	997,650	1,358,940	2,599,471	+1,240,531 (2)
4. Blister rust control operations on lands under jurisdiction of Interior Department (Department of the Interior)	132,426	285,421	646,418	+360,997 (3)
5. Cooperative blister rust control on state and privately-owned lands (Entomology and Plant Quarantine)	255,018	870,943	3,098,411	+2,227,468 (1)
6. Overtime pay	355,685	93,143	- -	-93,143
Covered into Treasury as miscellaneous receipts, Public Law 529	290	- -	- -	- -
Unobligated balance	69,869	- -	- -	- -
Total available	2,264,026	3,193,867	7,000,000	+3,806,133
Anticipated supplemental	- -	-270,000	- -	
Total estimate or appropriation	2,264,026	2,923,867	7,000,000	

INCREASES OR DECREASES

The net increase of $3,806,133 under this item for 1947 consists of the $93,143 decrease for overtime and the following increases enumerated by projects and agencies:

Bureau of Entomology and Plant Quarantine

(1) An increase of $2,297,748 ($70,280 under Project 1; $2,227,468 under Project 5) to cooperate with State and private agencies on blister rust control to permit completion of the initial eradication of ribes and to bring rework up to date on established control areas within a period of 5 years.

Control of white pine blister rust is conducted under the leadership of the Bureau of Entomology and Plant Quarantine, in cooperation with State and private agencies and with other Federal agencies. It involves work on State and private, National Forest, National Park, Indian, Public Domain, and Oregon and California revested lands. The Bureau of Entomology and Plant Quarantine carries the responsibility for cooperation with State and private agencies in the application of control measures on non-federal lands and for the over-all planning, coordination and technical direction of the work on lands of all ownerships. This leadership involves coordinating the control activities of all cooperating agencies into uniform work programs, maintaining effective standards of ribes eradication, enforcing Federal quarantine regulations, developing and improving control methods, and developing information on the status of the disease and the areas requiring attention.

The Problem and its Significance: White pines occur as valuable forest and ornamental trees in the 28 states in which the blister rust disease has become established. The control areas in State and private ownership in the cooperating States aggregate more than 22,900,000 acres. Initial ribes eradication has been performed on 18,816,000 acres, rework on 5,455,000 acres, and 7,735,000 acres are on maintenance. There remains 4,144,000 acres of control area still in need of initial ribes eradication as of January 1, 1945, plus a large acreage that will require one or more reworkings before it reaches a maintenance status.

In unprotected areas blister rust is killing many of the younger pines. Accelerated cutting during the war created new problems. The reproduction of white pine and the "come-back" of ribes on cut-over lands have increased appreciably the acreage needing immediate attention. As a result, both initial and rework are behind schedule, and the disease continues to spread into areas where the pines have not yet been initially protected.

It is considered important, therefore, to complete the initial eradication of ribes on unworked areas within a 5-year period and to bring the necessary re-eradication on previously worked areas up to date as soon as practicable. The disease is particularly

damaging to young trees and there will be reproduction taking place on extensive cut-over areas during the next few years.

Plan of Work: More than 80 percent of the requested increases will be used for employment of labor and crew foremen. A few additional technically trained men will be needed to assist with the coordination of field operations on lands managed by cooperating agencies, and to provide general supervision of the additional crews assigned to work on State and private lands. It is proposed to distribute the increase recommended for the fiscal year of 1947 among the five regions (Pacific Coast, Northwestern, Northeastern, North Central and Southern Appalachian) on the basis of the relative urgency of work at that time.

Forest Service.

(2) An increase of $1,240,531 (Project 3) for blister rust control to permit completion of the initial eradication of ribes and to bring rework up-to-date on established control areas on National Forest lands within a period of five years.

The Problem and its Significance: The National Forests contain extensive areas of eastern white pine, western white pine and sugar pine. These three species have high commercial, recreational and esthetic values representing forest assets of great importance in the economy of the National Forests. They grow rapidly and produce quality wood that is in demand for many specialty purposes. Present and potential stands have an important place in the management and development of the National Forests and control of the blister rust is one of the protective measures essential to their preservation.

Control areas containing important stands of eastern white pine, western white pine and sugar pine in the National Forests aggregate about 4,540,000 acres. Initial ribes eradication has been performed on 3,124,000 acres, rework on 539,000 acres, and approximately 1,971,000 acres, most of which is located in the East, are on maintenance. There remain 1,416,000 acres of control area still in need of initial ribes eradication, as of January 1, 1945, plus a large acreage that will require one or more reworkings before it reaches a maintenance status.

Blister rust is killing many of the younger pines in unprotected areas. In northern Idaho some stands of young trees have been ruined by blister rust and have had to be abandoned, because most of the trees had already become heavily diseased. The same situation is sure to develop in other unprotected areas, and prompt completion of the remaining initial and re-eradication of ribes is necessary to avert serious white pine losses. Also accelerated cutting during the war has created new problems. The reproduction of white pine and the "come-back" of ribes on cut-over lands have increased appreciably the acreage needing immediate attention. As a result, both initial and rework are

behind schedule, and the disease continues to increase in National Forest areas where control has not been established.

It is considered important, therefore, to complete the initial eradication of ribes on unworked areas within a 5-year period, and to bring the necessary re-eradication on previously worked areas up to date as soon as practicable. The disease is particularly damaging to young trees and the reproduction taking place on extensive cut-over areas during the next few years will need prompt and timely protection, to assure future stands of these valuable trees.

Plan of Work: Most of the requested increase will be used for employment of labor crew foremen, and to provide general field supervision for the additional crews assigned to work. It is proposed to distribute the increase recommended for the fiscal year 1947 to the affected Forest Service regions on the basis of the relative urgency of work at that time on the different National Forests.

Department of the Interior

(3) An increase of $360,997 for blister rust control to permit completion of the initial eradication of ribes and to bring rework up to date on established control areas on Department of the Interior lands within a period of 5 years.

The Problem and its Significance: The white pines form an important part of the forest cover in 14 National Parks, 1 Recreational Demonstration Area, the Blue Ridge Parkway, 12 Indian Reservations, and in some portions of the revested Oregon and California Railroad grant lands. These areas are so distributed that within their boundaries may be found one or more representatives of all 8 native species of white pines. The white pines on Indian Reservations have an estimated stumpage value of $1,700,000, and revested Oregon and California lands contain over one billion board feet of this timber. The white pine on these lands are, therefore, of economic importance in timber production. On the National Parks the white pines have very high values for scenic and recreational purposes and as specimen stands. Control of blister rust is essential to the preservation of the white pines and the continued protection and maintenance of these stands is of great importance in the utilization and management of the forestry and recreational resources of these areas.

Control areas on Department of the Interior lands bearing important white pine stands are estimated to aggregate 734,605 acres. Initial ribes eradication has been performed on 369,534 acres, rework on 104,421 acres, and 202,158 acres are on maintenance. There remains 365,071 acres of control area still in need of initial ribes eradication as of January 1, 1945, plus a large acreage that will require one or more reworkings before it reaches a maintenance status.

Blister rust is present in most of the National Parks, Indian Reservations, and Oregon and California revested lands that contain valuable white pine stands scheduled for protection. Already some stands have been severely damaged by the disease and where the rust is not brought under control by ribes eradication, this condition will continue to develop and increase in pine-ribes areas. Both initial and rework are behind schedule because of reduced control activity during the war. It is important, therefore, to complete the initial eradication of ribes on unworked areas and bring the necessary rework up to date as promptly as possible. The disease never ceases its attack and only adequate and timely application of control measures will save the white pines.

Plan of Work: Approximately 80 percent of the requested increase will be used for the employment of laborers and crew foremen, and to provide immediate field supervision for the additional crews assigned to ribes eradication work on Department of Interior lands. It is proposed to distribute the increase recommended for the fiscal year 1947 among the National Parks, O&C revested lands, and Indian lands in the affected regions of the United States, on the basis of the relative urgency of the work on these lands at that time.

CHANGE IN LANGUAGE

The estimate includes a proposed change in the language of this item as follows (new language underscored, deleted matter enclosed with brackets):

> * * *; and [$1,397,963] $3,754,111 of said amount to the Bureau of Entomology and Plant Quarantine for leadership and general coordination of the entire program, method development, and for operations conducted under its direction for such control, including, but not confined to [, cooperation with individual States, local authorities and private agencies in] the control of white pine blister rust on or endangering State and privately owned lands.

It is proposed that the language contained in this appropriation item in the 1946 Agricultural Appropriation Act, relating to cooperation in effectuating the purposes for which the appropriation is made, be deleted in the language of the 1947 estimates. The sole purpose of the proposed deletion from the appropriation is to shorten and simplify the item. The clause proposed for deletion is considered surplusage and, therefore, need not be retained in the annual appropriation act, the cooperative work being authorized by the Act of April 26, 1940 (16 U.S.C. 594a) for forest protection against the white pine blister rust.

Elimination of the language from the annual appropriation act will not--in any way--change the scope or character of the work performed under this appropriation item, or the authority of the Department to cooperate with other agencies, institutions, organizations, or others in the conduct of such work.

WORK UNDER THIS APPROPRIATION

Objective: To control white pine blister rust in the white pine forest areas of the United States by the timely eradication of the disease-spreading alternate host plants (currants and gooseberries, commonly called Ribes), so as to preserve the present and future economic, aesthetic, and recreational values of these forest trees.

The Problem and its Significance: The blister rust problem in the United States involves the suppression of Ribes on white pine control areas aggregating about 28,000,000 acres. These areas occur on the National Forests, National Parks, O&C Revested lands, Public Domain, Indian Reservations, and on State and privately owned lands. Federal, State and privately owned lands are often intermingled, and under such conditions the control work must be coordinated and operated as uniform work programs.

Completion of the initial control work will prevent serious losses of young growth from this disease. Also, re-eradication is important in keeping Ribes on the decline in worked areas. This is accomplished by proper timing of re-eradication to prevent Ribes from producing seed. As the initial work has been done over a period of several years, some of the worked areas are reaching the re-eradication stage each year and should be promptly reworked to maintain the most effective control of the rust. Reworking keeps the Ribes population on the downward grade and safeguards the investment already made. In many control areas one reworking is enough to reduce the number of Ribes so low that the areas can be placed on a maintenance basis. Others require two or more reworkings. Once these areas have reached a maintenance basis, a small amount of work is needed each year to maintain the control status and to eradicate Ribes from new sites that are being taken over by natural reproduction and by forest plantings.

There are 8 species of native white pine in this country, three of which are of great economic value. The three commercial species are the eastern white pine which extends from Maine southward to Georgia and westward to Minnesota, the western white pine of the northern Rocky Mountain region, and the sugar pine of Oregon and California. The mature stands of these trees have an estimated stumpage value of about $300,000,000. The young growth probably represents equal or greater values in potential future crops. Also, the white pines in general are highly important over extensive areas for park and recreational purposes and for watershed use on public and private lands. The conservation of the country's white pine resources is an integral part of a program to keep these forests productive and provide timber supplies which are recognized as important military assets. The control of blister rust is necessary to protect and conserve the supply of this valuable wood for present and future national welfare, to provide for the stability of white-pine-using industries, and to maintain employment and community welfare in white-pine-producing areas.

The white pines constitute a renewable forest resource of great importance to present and future forestry in this country. These forests are in serious danger from white pine blister rust, a destructive fungous disease of foreign origin that is now present in 28 States. The rust kills the white pines, the young trees dying quickly and the older trees more slowly. In unprotected areas the young growth and many of the older trees scattered through the forests are already succumbing to the disease. The fungus which causes blister rust spends part of its life cycle on currant and gooseberry plants. Spores produced on these plants infect white pines, and form bark cankers that kill. Control is accomplished by the elimination of the currant and gooseberry bushes within and near the better white pine stands.

Eastern white pine is commercially important over extensive areas from Minnesota to Maine and south to Georgia. On good sites this species is capable of producing from 20,000 to 30,000 board feet per acre in 60 years, and is one of the principal sources of income for owners of farm woodlots and forest lands. In eastern Washington, northern Idaho, and western Montana, the continued production of Western white pine is the backbone of local economy and essential to the maintenance of dependent industries and the production of valuable timber products for Nationwide markets. Likewise, sugar pine is of high economic importance within its natural range in California and Oregon. These regions are sources of commercial timber supplies that must be protected from blister rust to safeguard present and future white pine forests and the industries for which they furnish the raw material.

General Plan: The white pine blister rust control work is conducted under the leadership of the Bureau of Entomology and Plant Quarantine in cooperation with other Federal, State, private and local agencies.

The Bureau of Entomology and Plant Quarantine carries the responsibility for the over-all planning, coordination, and technical direction of the work. It also determines the location and intensity of blister rust infection, develops and improves control methods, maintains effective standards of Ribes eradication, enforces the Federal blister rust quartine, and carries out surveys to locate and map white pine. Ribes eradication on State and private lands is performed by the Bureau in cooperation with the agencies and individuals concerned. Authority for the removal of Ribes is provided under the plant pest laws and regulations of the cooperating States, which also are responsible for regulating the movement of Ribes and pines within the State.

The Forest Service is responsible for Ribes eradication carried out on lands under its jurisdiction, and the Department of the Interior for similar operations on lands under its administration, including the National Parks, Indian Reservations, and the Oregon and California revested lands.

White pine forest stands are selected for blister rust protection on the basis of minimum stocking requirements agreed upon by the cooperating agencies. These vary somewhat in accordance with forest practice in the different white pine regions. Such stands and their surrounding

900-foot protective zones are called control areas. The establishment of control areas for the protection of ornamental, recreational, or aesthetic white pine stands depends upon their value, importance, and use for such purposes.

The control areas are cleared of Ribes by laborers operating under close supervision. They are then checked by trained employees to make sure the Ribes have been reduced to a point that effectively establishes control of the disease. These control areas are reexamined at periodic intervals of about 4 to 6 years to locate areas reinfested by Ribes that may have developed from sprouts or from seeds in the soil, or from small missed bushes. Such areas are reworked to maintain continuous control of the rust. In the West, white pine forests are remote from centers of population, and the workmen have to be subsisted in camps within the control areas.

General Status of Work, and Operations During 1944:

General. The results of blister rust control work conducted during the earlier years of the program were reflected in available lumber supplies to meet wartime needs and in young growth to provide the next forest crop that otherwise would be killed by the disease. Stands of white pine initially protected from blister rust in the earlier years of the control program are being harvested, and the young growth now receiving protection by Ribes (currant and gooseberry) eradication will provide lumber for the future. During the 5-year period 1940-1944 nearly 10,000,000,000 board feet of white pine lumber were used in connection with the war effort. Accelerated cutting of white pine caused by war demands continued during 1944, and further increased the need for prompt protection of the younger growth. The small trees are soon killed by blister rust and continued crops of this valuable wood depend upon the maintenance of these trees in the forests.

In general, the over-all accomplishments for 1944 were about the same as for the previous calendar year, with continued emphasis being placed on needed rework to maintain control of the disease on areas already initially protected. Seasonal labor was employed in all operating regions and totaled about 4,500 persons at the peak of the season. In remote forest areas 71 camps were operated by the cooperating agencies in connection with ribes eradication work. Most of these were located in the western white and sugar pine regions. In forest areas where camps were unnecessary, the required seasonal labor was obtained in the localities where the work was in progress. The availability of labor varied considerably, being scarce in some areas and more plentiful in others. Cooperation was maintained with local employment agencies, and in farming communities employees were released as needed to aid with the planting and harvesting of agricultural crops.

Of the approximately 28,000,000 acres of white pine control area in 28 states, initial eradication of ribes has been completed on over 22,300,000 acres, and of this acreage over 9,900,000 acres is on maintenance. During the calendar year 1944, the combined efforts of the several cooperating Federal, State, and private agencies resulted in

the eradication of 16,185,463 ribes on 969,372 acres of forest land of which 479,358 acres was rework, and 490,014 initial eradication. The latter, however includes 298,473 acres which required no crew work because they were found to be ribes-free on the initial examination. The actual acreage initially eradicated of ribes, therefore, was 191,541. This shows that most of the ribes eradication activity was concentrated on needed rework to maintain control in areas worked initially prior to the outbreak of war. A summary of results accomplished during the calendar year 1944, by regions and land ownership, is given in Tables 1 and 2, and the status of control through 1944, by land ownerships and regions, is given in Tables 3 to 6.

Bureau of Entomology and Plant Quarantine.

The Bureau continued to provide for the over-all planning, coordination, and technical direction of the cooperative control work to unite the work of all agencies into a uniform program. The technical and supervisory organization was adjusted to war conditions by leaving unfilled some of the vacancies caused by draft or transfer, by temporary deferment of key employees required to discharge the work of the Bureau and its responsibilities to cooperating State and Federal agencies, and by cooperating wherever practicable to assist wartime forest activities such as emergency fire suppression and timber production war project. In cooperation with participating agencies, field examinations were made and white pine areas selected for protection on the basis of pine stocking ribes population, and status of the rust. These areas were classified as to priority for working or further examination, according to their lumber-producing potentialities in relation to the feasibility of the control work. White pine stands in parks or other non-timber producing areas were selected on the basis of their aesthetic, scenic and recreational values.

During 1944, the Bureau of Entomology and Plant Quarantine in cooperation with State and private agencies eradicated 7,615,724 ribes on 615,842 acres, of which 155,437 acres were initial work, 400,865 rework, and 59,540 were found free of ribes on initial examination. The latter acreage did not require any crew work. Removing these ribes was of primary importance in protecting pines on State and private lands, but in some regions where these lands are intermingled with Federal lands, the work also afforded protection to the pines in Federal ownership. Seasonal workers were trained and technical supervision was given to their work to obtain maximum production and to maintain effective standards of ribes eradication. 3,714 cultivated black currant, Ribes nigrum, were destroyed during the year. These plants are very susceptible to blister rust and one of the principal agents in the long-distance spread and local establishment of the disease. The status of the work at the end of 1944 is shown in Table 3.

Blister rust cankers were removed from over 50,000 infected white pines to save them from being killed by the disease. Many white pines of high ornamental value have been attacked by blister rust within the infected regions. These trees can be saved, when the disease has not

progressed too far by cutting outthe infected parts. The work includes canker elimination in small centers of pine infection in the sugar pine region, to prevent rapid intensification of the rust and to retard its southward spread.

Ribes eradication was carried on around 19 nurseries to protect over 62,000,000 young pines growing in nursery and transplant beds. In this work 1,540 ribes were destroyed on 9,089 acres. This is an average of less than .2 of a bush per acre and is indicative of the high degree of blister rust protection maintained around nurseries to assure rust-free stock for forest planting. A number of nurseries and their environs are now practically ribes-free and are maintained in this condition by periodic inspection and by reworking any portions on which ribes reappear and endanger the pine.

Work on the development and improvement of control measures was continued in the western white and sugar pine regions, where a solution is being sought for several troublesome control problems. In Idaho the completion of dosage tests with ammonium sulfamate on Ribes lacustre in the western white pine type show this chemical is a more effective herbicide for the eradication of this species than any of those previously tested. The eradication of this species by hand pulling methods is not entirely satisfactory, because the stems and roots break easily and are difficult to thoroughly remove. Earlier experimental data had shown ammonium sulfamate was most effective in moist cool soils and that early or late season treatments gave the best results. In California tests on greenhouse-grown R. roezli with 2,4-dichlorophenozyacetic acid in a polyethylene glycol carrier showed that it was markedly toxic in concentrations as low as 0.08 per cent. R. roezli is the principal species in the sugar pine region and common herbicides that could be used are not effective. It grows and reproduces vigorously and is difficult to eradicate. A new sampling method was devised and used which facilitated recording of data on the status of blister rust infection in pine stands. This method adjusts the amount of check strip needed for a desired accuracy according to the pine stocking and the estimated amount of infection present. Practical use was made of methods developed for evaluating ribes regeneration factors in relation to approved practices for the management of western white pine. Studies were continued on the factors affecting moisture relations of ribes in pine-type soils, the germination and longevity of ribes and pine seeds, the development of new herbicides and new equipment for ribes eradication, and the effects of logging, burning, and grazing on ribes regeneration.

Blister rust occurs in more or less abundance in the principal white-pine-timber producing areas in the eastern and western white pine regions and the northern half of the sugar pine region. The chief points of concern in connection with the spread of the rust in 1944 were the finding of infected white pines in 5 new counties in northeastern Iowa, a 65-mile southward extension of the rust on ribes in California, the discovery of infection on ribes in Yellowstone National Park, and the finding of the disease on Pinus flexilis within its natural range. In California blister rust was found in Yuba county

on sugar pines and ribes. The cankers on pines apparently originated in 1938. In addition, diseased ribes were located for the first time in Placer, Eldorado, and Amador counties. This extends the disease southward to the center of the sugar pine belt, a distance of about 65 miles from the previously known limit of spread. In the sugar pine areas of southern Oregon and northern California more infected ribes and pines were observed than in any previous year, and Ribes sanguineum in particular, was generally and heavily diseased. The leaves of Ribes bracteosum also were heavily infected with rust. During the spring and early summer, the weather favored the infection of ribes, but it was not so favorable for the infection of pines during the late summer and early fall. The amount of pine infection that may result from the heavy ribes infection in 1944 will not be known until the rust has had a chance to become visible on the pines 3 to 4 years hence. In Montana, blister rust on Pinus flexilis was found in the vicinity of Two Medicine Lake, Glacier National Park. This infection is the first reported finding of the disease on pine in the western states, east of the Continental Divide, and the first on P. flexilis within its natural range. The cankers were probably of 1937 origin. Also, the disease was found in Wyoming for the first time. It was located there on Ribes petiolare in the "Mammoth" area in the northwestern part of Yellowstone National Park.

The discovery of blister rust on native white pine in Allamakee, Delaware, Howard, Clayton, and Winneshiek counties, Iowa, was of particular interest because much of the pine in this State occurs as small, scattered shelterbelts and planted stands. On ribes, the disease was found for the first time in Cerro Gordo, Grundy, Hancock, Johnson, Jones, Kossuth, Muscatine, Scott, and Webster counties. These findings increase the number of counties in Iowa from which infected white pines and diseased ribes have been reported to 8 and 42, respectively. In addition, the rust was located on white pines for the first time in Arenac and Gladwin counties, Michigan; Crawford and Greenlake counties, Wisconsin; and Stearns and Clearwater counties, Minnesota. In the latter State, the disease also was found on ribes in Stearns county for the first time. In the Southern Appalachian States extension of the rust was limited to Patrick county, Virginia, where it was found for the first time on ribes. In the Northeastern States, blister rust is generally distributed on the white pines throughout their natural range. The amount of infection varies from a small percentage of diseased trees in some stands to nearly 100 per cent in others. Many stands of timber contain a large number of dead and dying white pines as a result of long-standing infection that took place before the ribes were removed. The disease occurs every year on ribes during the spring, summer, and fall, with the degree of infection varying from light to heavy, depending upon the prevalence of weather conditions favorable for rust development. In the areas eradicated of ribes, most of the smaller diseased trees have died and disappeared, and cankers resulting from recent infections are scarce. This is a complete reversal of the pine infection situation that existed in these areas before the ribes were removed. During the earlier years of the control program, young cankers on white pines were present in nearly every stand. The absence of such cankers in the protected areas is the result of perseverance in ribes eradication and demonstrates the effectiveness of this work in establishing and maintaining control of the rust.

The examination of nursery stock enroute at key transfer points in the United States was continued as the primary means of securing compliance with the Federal domestic quarantine on account of white pine blister rust. These restrictions have been instrumental in retarding the spread of the disease. Control measures are being applied cooperatively on a large scale in both infected and non-infected white pine states. Current quarantine measures are designed (1) to protect two pine-growing regions in which the disease has not yet become established; one comprised of Arizona, Colorado, Nevada, New Mexico, Utah, Wyoming, and part of California; and the other Georgia, Kentucky, North Carolina, South Carolina, and Tennessee; and (2) to control the shipping of currant and gooseberry plants into 23 States which maintain blister rust control areas and in which the planting and growing of these plants in specified areas is prohibited as a measure of protection to white pine stands. During the fiscal year 1945, 219 shipments consigned in violation of the quarantine were intercepted. The majority of these shipments consisted of currant and gooseberry plants moving without control-area permits into states which have established areas where the growing of these plants is prohibited or restricted.

Forest Service:

Initial control work on national forests has covered 3,124,169 acres out of the present estimated control areas of 4,539,191 acres. This leaves 1,415,022 acres still to receive initial ribes eradication as of January 1, 1945, of which 1,084,343 acres are in the West, with 354,165 acres in the western white pine region and 730,178 acres in the sugar pine region. During the calendar year 1944 in the face of many handicaps due to the war, 6,198,123 ribes were destroyed on 337,351 acres with 74,142 man days. Of the total acreage, 24,053 acres were worked in the western white pine region, and 23,771 in the sugar pine region, or a total of 47,824. Of this total, 31,696 acres were rework, and 16,128 initial eradication.

In the eastern national forests the important job is to maintain the areas already covered and extend the work to cover white pine areas estimated at 330,679 acres, which have not been initially protected. Nearly all of this acreage is on national forests located in the Southern Appalachian and Lake States. A total of 289,527 acres were worked in 1944, of which 36,413 acres were rework and 14,181 acres initial eradication. The remaining 238,933 acres did not require any crew work because they were found to be free of ribes on the initial examination. Most of this area is located in the Southern Appalachian States, where rapid coverage is possible because of the absence of ribes in many localities. In these states, initial ribes eradication was performed on 6,528 acres and rework on 16,183 acres. In the Northeastern States, the work was primarily of a maintenance nature to insure the continued effectiveness of past control work. In the national forests of the Lake States rework was performed on 19,601 acres and initial eradication on 7,541 acres. In this region there is estimated to be 141,006 acres still in need of initial ribes eradication to protect white pine stands. The status of work at the end of 1944 is shown in Table 4.

National Park Service:

On lands under the jurisdiction of the National Park Service, initial control work has covered 233,859 acres out of the present estimated control areas of 466,617 acres, leaving 232,758 acres still to receive initial ribes eradication as of January 1, 1945. White pine blister rust control was advanced during the calendar year 1944 by the eradication of 994,610 ribes on 10,136 acres, of which 1,603 acres were initial eradication work and 8,533 acres re-eradication work. The bulk of the control work was accomplished in the sugar pine and western white pine regions, where the major initial eradication work yet to be done on National Park lands is located. Control work also was continued in the National Parks in the Northeastern and Southern Appalachian States.

Five-needle pines form an important part of the forest cover in 13 National Parks, one recreational demonstration area, and the Blue Ridge Parkway. As the disease is becoming more widespread each year, it is imperative to protect the pines within these nationally important areas in order to prevent them from being killed. The status of the work at the end of 1944 is shown in Table 5.

General Land Office:

On Revested Oregon and California Railroad and Reconveyed Coos Bay Wagon Road grant lands, under the jurisdiction of the General Land Office, initial control work has covered 38,776 acres of an estimated total of 129,709 acres, leaving 90,933 acres still in need of initial ribes eradication as of January 1, 1945. White pine blister rust control was advanced during the calendar year 1944 by the eradication of 43,845 ribes on 1,270 acres, nearly all of which was initial eradication. Considering that there are over a billion feet board measure of highly valued five-needle pines on O&C lands, any extensive blister rust losses would greatly reduce the potential commercial value of these lands. The status of work at the end of 1944 is shown in Table 5.

Office of Indian Affairs:

On Indian reservations lying within the Lake States, initial control work has covered 80,182 acres out of an estimated total of 108,870 acres, leaving 28,688 acres still in need of initial ribes eradication as of January 1, 1945. White pine blister rust control work was advanced during the calendar year 1944 by the eradication of 1,333,161 ribes on 4,773 acres, of which 1,761 acres were re-eradication, and 3,012 acres initial work. The total stumpage value of the five-needle pines within the forests of 12 Indian Reservations is estimated to be approximately two million dollars. Control work is essential, if this natural resource is to be protected. The status of work on Indian reservations at the end of 1944 is shown in Table 5.

Table 1.--Ribes Eradication Work by All Cooperating Agencies During the Calendar Year 1944
(Initial and re-eradication)

Region	Initial Eradication (Acres)	Re-eradication (Acres)	Total (Acres)	Effective Labor (Man-Days)	Ribes Destroyed (Number)
Northeastern	98,659	315,441	414,100	29,423	2,491,161
Southern Appalachian	307,928 1/	34,076	342,004	14,421 2/	912,662
North Central	49,484	72,530	122,014	19,441	2,737,714
Northwestern	10,558	26,908	37,466	49,525	2,646,894
Pacific Coast	23,385	30,403	53,788	53,156	7,397,032
Total	490,014	479,358	969,372	165,966	16,185,463

1/ Includes 298,473 acres found Ribes-free.
2/ Includes 2,826 man-days blocking out Ribes-free acreage.

Table 2.--Summary of Acreage Worked in 1944 by Land Ownership and Regions
(Initial and re-eradication)

Ownership	Eastern White Pine Region (Acres)	Western White Pine Region (Acres)	Sugar Pine Region (Acres)	Total (Acres)	Effective Man-Days	Ribes Destroyed
Federal:						
National Forest	289,527	24,053	23,771	337,351	74,142	6,198,123
O & C Revested Lands	- -	- -	1,270	1,270	908	43,845
National Parks	3,923	842	5,371	10,136	9,571	994,610
Indian Reservations	4,773	- -	- -	4,773	5,830	1,333,161
Subtotal: INTERIOR	8,696	842	6,641	16,179	16,309	2,371,616
Total, Federal	298,223	24,895	30,412	353,530	90,451	8,569,739
State and Private	579,895	12,571	23,376	615,842	75,515	7,615,724
Grand Total	878,118 1/	37,466	53,788	969,372	165,966 2/	16,185,463

1/ Includes 298,473 acres found Ribes-free.
2/ Includes 2,826 man-days blocking out Ribes-free acreage.

Table 3.--Progress of Ribes Eradication on State and Private Lands through 1944

Region	Total control area	Initial Eradication		Re-eradication		On Maintenance
		Worked	Unworked	First Reworking	Other Reworkings	
	(Acres)	(Acres)	(Acres)	(Acres)	(Acres)	(Acres)
Northeastern	12,580,224	10,808,452	1,771,772	4,399,603	561,116	2,601,321
Southern Appalachian	4,676,359	4,447,438	228,921	123,887	24,504	4,124,590
North Central	3,478,966	2,422,213	1,056,753	616,885	55,931	543,162
Subtotal, Eastern	20,735,549	17,678,103	3,057,446	5,140,375	641,551	7,269,073
Northwestern	1,180,077	693,357	486,720	158,733	35,513	256,293
Pacific Coast	1,044,910	445,096	599,814	155,761	24,015	210,540
Subtotal, Western	2,224,987	1,138,453	1,086,534	314,494	59,528	466,833
Grand total	22,960,536	18,816,556	4,143,980	5,454,869	701,079	7,735,906

Table 4.--Progress of Ribes Eradication on National Forest Lands through 1944

Region	Total control area	Initial Eradication		Re-eradication		On Maintenance
		Worked	Unworked	First Reworking	Other Reworkings	
	(Acres)	(Acres)	(Acres)	(Acres)	(Acres)	(Acres)
Northeastern	9,613	7,827	1,786	4,238	3,255	2,513
Southern Appalachian	1,614,627	1,426,740	187,887	54,498	11,200	1,303,788
North Central	413,183	272,177	141,006	75,033	9,120	103,671
Subtotal, Eastern	2,037,423	1,706,744	330,679	133,769	23,575	1,409,972
Northwestern	1,392,369	1,038,204	354,165	232,312	37,242	381,845
Pacific Coast	1,109,399	379,221	730,178	173,030	51,433	179,139
Subtotal, Western	2,501,768	1,417,425	1,084,343	405,342	88,675	560,984
Total	4,539,191	3,124,169	1,415,022	539,111	112,250	1,970,956
Rocky Mountain (Colorado and Wyoming)1/	421,000	36,619	384,381	1,962	--	17,000
Grand total	4,960,191	3,160,788	1,799,403	541,073	112,250	1,987,956

1/ Experimental work with W.P.A. labor to determine feasibility of control by Ribes eradication in these States.

Table 5.--Progress of Ribes Eradication on Department of Interior Lands through 1944

Region	Total control area	Initial Eradication		Re-eradication		On Maintenance
		Worked	Unworked	First Reworking	Other Reworking	
	(Acres)	(Acres)	(Acres)	(Acres)	(Acres)	(Acres)
National Parks						
Northeastern	17,666	17,666	- -	10,022	2,626	14,700
Southern Appalachian	121,856	120,149	1,707	5,964	2,841	106,410
North Central	120	120	- -	- -	- -	- -
Subtotal, Eastern	139,642	137,935	1,707	15,986	5,467	121,110
Northwestern	13,581	6,778	6,803	4,519	5,530	5,080
Rocky Mountain (Colorado and Wyoming) 1/	25,700	- -	25,700	- -	- -	- -
Pacific Coast	287,694	89,146	198,548	17,492	- -	40,804
Subtotal, Western	326,975	95,924	231,051	22,011	5,530	45,884
Total, National Parks	466,617	233,859	232,758	37,997	10,997	166,994
O&C Revested Lands						
Pacific Coast	129,709	38,776	90,933	90	- -	20,528
Public Domain Lands						
Northwestern	29,409	16,717	12,692	5,900	1,039	5,812
Indian Lands						
Southern Appalachian 2/	445	445	- -	- -	- -	445
North Central	97,425	79,737	17,688	45,458	2,940	8,379
Rocky Mountain (Colorado and Wyoming) 3/	11,000	- -	11,000	- -	- -	- -
Total, Indian Lands	108,870	80,182	28,688	45,458	2,940	8,824
Grand Total	734,605	369,534	365,071	89,445	14,976	202,158

1/ Yellowstone, 12,900 acres; Grand Teton, 5,800; Rocky Mountain, 7,000 acres.
2/ Cherokee Reservation, North Carolina.
3/ Shoshone Reservation, Wyoming.

Table 6.--Progress of Ribes Eradication on Lands in All Ownerships through 1944

Region	Total control area	Initial Eradication		Percent initially worked	Re-eradication		On Maintenance	
		Worked	Unworked		First Reworking	Other Reworking		
	(Acres)	(Acres)	(Acres)		(Acres)	(Acres)	(Acres)	Per-cent
Northeastern	12,607,503	10,833,945	1,773,558	86	4,413,863	566,997	2,618,534	21
Southern Appalachian	6,413,287	5,994,772	418,515	94	184,349	38,545	5,535,233	92
North Central	3,989,694	2,774,247	1,215,447	70	737,376	67,991	655,212	16
Subtotal, Eastern	23,010,484	19,602,964	3,407,520	85	5,335,588	673,533	8,808,979	38
Northwestern	2,615,436	1,755,056	860,380	67	401,464	79,324	649,030	25
Pacific Coast	2,571,712	952,239	1,619,473	37	346,373	75,448	451,011	18
Subtotal, Western	5,187,148	2,707,295	2,479,853	52	747,837	154,772	1,100,041	21
Total	28,197,632	22,310,259	5,887,373	79	6,083,425	828,305	9,909,020	35
Rocky Mountain (Colorado and Wyoming) 1/	457,700	36,619	421,081	8	1,962	- -	17,000	4
Grand Total	28,655,332	22,346,878	6,308,454	80	6,085,387	828,305	9,926,020	35

1/ Experimental work with WPA labor to determine feasibility of control by ribes eradication in these states.

PASSENGER-CARRYING VEHICLES

There have been no new passenger cars purchased from this appropriation since the fiscal year 1943. Authority has been granted to the Bureau of Entomology and Plant Quarantine to purchase 15 cars during the fiscal year 1946 and to the Department of the Interior for the purchase of one. There is additional need on this project for 25 new cars, 13 of which will be additional cars and 12 will be replacements. The 12 cars to be replaced are more than seven years old and have averaged over 70,000 miles. The 13 new cars are urgently needed especially in view of the contemplated greatly expanded program and will be used by supervisors as follows:

Entomology and Plant Quarantine: 4 from headquarters at Oakland, California; 1 from Duluth, Minnesota; 1 from Menomonie, Wisconsin; 1 from Milwaukee, Wisconsin.

Forest Service: 1 each from headquarters at Missoula, Montana, and San Francisco, California.

Department of the Interior: 1 each from headquarters at Portland, Oregon, and Omaha, Nebraska; 2 from San Francisco, California.

FOREST SERVICE
Salaries and Expenses

(a) Preamble

The estimates include three changes of language in the preamble. The first two changes represent additions to existing language, and are quoted below:

Change No.	
1	* * *and not to exceed $10,000 for employment pursuant to the second sentence of section 706 (a) of the Department of Agriculture Organic Act of 1944
2	(5 U.S.C. 574), the maintenance, repair, and operation of one passenger automobile in the District of Columbia,

The first change in language requested will make it possible to contract for the services of consultants and consulting organizations in solving problems which occassionally arise in the design of special equipment, facilities and test materials; in the development of new test procedures, in the analysis and interpretation of research data; and in solving management problems of various kinds. In the past, those services have been obtained by searching out consultants who were willing to work for one of the rates specified in the classification schedule. This has restricted the field of selection to such an extent that--usually--outstanding consultants could not be employed. Neither has it been possible to contract for the services of organizations which specialize in providing these types of services.

Examples of expert and consulting services:

1. Development of new type parachute for jumps in timbered country.
2. Development of foam type fire extinguishing chemical suitable for use in fighting forest fires.
3. Analysis of data and development of design criteria for natural, modified and converted wood products for use in aircraft.

The second change in language continues an authorization formerly carried in the appropriation "Salaries and expenses, Office of the Secretary" for the operation of a passenger car in the District of Columbia. The authorization for the operation of a passenger-carrying vehicle in the District of Columbia by the Forest Service dates back to 1929.

The third change in language eliminates the last proviso from the item and is quoted below:

> [Provided further, That not to exceed $1500 may be expended for the contribution of the United States to the cost of the office of the secretariat of the International Union of Forest Research Stations and of the Department of Timber Utilization of the Comite' International du Bois]

This proviso has been deleted because it is expected that contributions of the type mentioned in the proviso will be made by the new Food and Agriculture Organization.

(b) General Administrative Expenses

Appropriation Act, 1946		$542,000
Anticipated supplemental for additional costs due to the Federal Employees Pay Act of 1945		+75,000
Total anticipated available, 1946		617,000
Budget estimate, 1947		610,000
Change for 1947:		
Overtime decrease	-10,340	
Increase	+3,340	-7,000

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
1. General administration and business services	$543,651	$606,660	$610,000	$+3,340
2. Overtime pay	80,481	10,340	- -	-10,340
Covered into Treasury as miscellaneous receipts, Public Law 529	220	- -	- -	- -
Unobligated balance	648	- -	- -	- -
Total available	625,000	617,000	610,000	-7,000
Anticipated supplemental	- -	-75,000	- -	
Total estimate or appropriation	625,000	542,000	610,000	

INCREASES OR DECREASES

The net decrease of $7,000 in this item for 1947 consists of a $10,340 decrease for overtime, and an increase of $3,340 for placing on a full-year basis in 1947, within-grade salary advancements which are estimated to be in effect for only a part of the fiscal year 1946.

CHANGE IN LANGUAGE

The estimates include a proposed change in the language relating to the amount of salary for the Chief Forester. The salary of the Chief Forester, which in 1946 is specifically appropriated for at the annual rate of $9,200 in the Agricultural Appropriation Act (for which authority is contained in 5 U.S.C. 673), was increased to $10,000 in accordance with the provisions of Sections 602(b) and 603(b) of the Federal Employees Pay Act of 1945, approved June 30, 1945 (Public Law 106). Accordingly, the Chief Forester is receiving a salary at the rate of $10,000 in 1946 and, therefore, the proposed language change will merely continue his present rate of compensation and will not result in an increase in compensation in 1947.

WORK UNDER THIS APPROPRIATION

The work under this appropriation provides for the leadership, coordination, planning and control of the program of work of the Forest Service. It provides also for the service and facilitating operations which are necessary in the central office relating to finance and fiscal control, personnel management, information and education, business management, procurement, and drafting, as well as for the necessary inspection and audit of field operations. The organization of the general administrative divisions consists of the Chief's office, Fiscal Control, Personnel Management, Information and Education, Operation, and the sections of Forest Land Planning, Drafting and Photography.

The Forest Service has three major responsibilities. They are:

1. The protection, management, development and utilization of more than 179,000,000 acres of land within the national forests, equivalent to approximately 10 percent of the area of the continental United States.

2. The promotion of good forest practices, including the protection of forests, on the 431,000,000 acres of state and private forest lands.

3. Forest and range research for all forest and open range lands.

The primary function of the Forest Service is to carry out the responsibility of the Federal Government in working out solutions of the Nation's forestry problems.

On the national forests this means direct technical management for the production of timber, forage for range livestock, water, wildlife, and recreation. It means the protection of public and intermingled private lands from fire and tree diseases, as well as the integration of the management of all forest resources, in order that they will contribute as fully as possible to economic and social betterment. It means, in short, the administration of the national forests in the broadest public interest and the demonstration of proper forest and related land management.

On the privately owned forest lands, which in major part are being badly handled from a national point of view, it means education, leadership, planning, and coordination of technical information. It means cooperation with the states and private agencies in protection against fire, in forest planting, and in obtaining improved forest management practices.

The attainment of these objectives requires the conduct of a large amount of research in all phases of forestry and range management, both independently and in cooperation with other technical and with industrial agencies. Research in the technique of protecting, improving, and utilizing the forest and range resources and in the profitable use of land

for forestry and grazing is essential to success in the management of forest and range lands. This research deals with problems of broad regional or national scope rather than those of a purely local character and is conducted under the provisions of the McSweeney-McNary and Norris-Doxey Acts.

Operating in three broad fields of activity, through its many field and cooperators' offices, the Forest Service is confronted with a complex and unusually difficult general administrative problem. There are approximately 1,000 field offices of the Forest Service, the majority of which are "one-man offices," where the opportunities for personal contacts with other employees are infrequent. Under these conditions there must be a constant flow of information and instructions from the central office to the field on policy and other matters.

The work of the Forest Service is closely allied with that of many other Government agencies, particularly the Soil Conservation Service; Bureau of Entomology and Plant Quarantine; Bureau of Plant Industry; Soils and Agricultural Engineering; Bureau of Agricultural and Industrial Chemistry; Bureau of Agricultural Economics; Public Roads Administration; Fish and Wildlife Service; the Grazing Service; the National Park Service; Agricultural Experiment Stations; 40 State forestry organizations; etc. Because of its numerous fields of responsibility and resulting activity throughout the forested sections of all the states and territories, the Forest Service organization is of necessity, as well as a result of thorough study, test, and deliberate choice, very thoroughly decentralized. This policy and practice is illustrated by the Division of Fire Control, which has responsibility for leadership and control (a) over a field force of from 5,000 to 20,000 persons engaged primarily in fire control work, and (b) over expenditures up to 10 million dollars a year. Yet the Division is composed, in the Washington Office, of only 4 persons above the clerical grade. Other functional divisions in the main office are similarly restricted in size.

(c) National Forest Protection and Management

Appropriation Act, 1946		$16,649,100
First Deficiency Appropriation Act, 1946 (for reforestation of denuded forest areas).....		+ 300,000
Anticipated supplemental for additional costs due to Federal Employees Pay Act of 1945		+ 2,550,000
Total anticipated available, 1946		19,499,100
Budget estimate, 1947		20,915,000
Change for 1947:		
Overtime decrease	- 573,089	
Increase	+1,988,989.....	+ 1,415,900

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
1. General management operation, and regulation of national forest properties, including enforcement of Federal laws and regulations applicable to national forests.....	5,328,979	$6,092,491	$6,135,913	$+43,422 (1)
2. Maintenance of improvements other than roads and trails (includes telephone lines, fences, lookout towers and observatories, fire breaks, offices, barns, garages, dwellings, outhouses, water developments, pipe lines, public campgrounds, landing fields, etc.).....	967,404	1,140,889	1,649,389	+508,500 (2)
3. Forest fire control, including prevention of fires and maintenance of a detection and "smoke-chaser" organization.....	5,489,505	6,131,301	6,158,335	+27,034 (1)
4. Control of tree destroying insects and rodents on national forests.....	98,763	98,787	98,787	- -
5. Timber and forest products sales, free and administrative timber use, timber surveys, management plans, and timber stand improvement.....	2,339,561	3,027,202	3,044,502	+17,300 (1)

PROJECT STATEMENT - Cont.

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
6. Allocation and issuance of grazing permits, supervision of range use by domestic livestock, range surveys and range management plans on national forests.....	423,470	607,580	712,102	+ 104,522 (
7. Protection of the wildlife resources, preservation of forest conditions conducive to the propagation of wildlife, reduction in number of game animals in overstocked areas, wildlife surveys, and management plans.....	112,631	125,969	126,689	+720 (
8. Enforcement of sanitary laws, garbage disposal policing, and other requisite measures for safeguarding health and safety of national forest users.....	149,299	212,723	313,805	+ 101,082 (4
9. Land-use management on national forests, including rental of land; land classification; action on claims entered under public land laws; location and posting of national forest boundaries; general surveys, plans and maps, aerial photography; land exchange.....	422,650	697,514	1,181,954	+484,440 (5)
10. Protection, development, and management of the water resources of the national forests.....	32,825	36,761	37,030	+ 269 (1)
11. Construction of improvements other than roads and trails (includes telephone lines, fences, lookout towers and observatories, fire breaks, offices, barns, garages, dwellings, outhouses, water developments, pipe lines, public campgrounds, landing fields, etc.).....	69,363	71,484	71,684	+ 200 (1)

PROJECT STATEMENT - Cont.

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
12. Reforestation of denuded national forest areas.....	245,802	683,310	1,384,810	+ 701,500 (6)
13. Overtime pay.....	2,568,278	573,089	- -	-573,089
Covered into Treasury as miscellaneous receipts, Public Law 529.....	6,200	- -	- -	- -
Unobligated balance.....	49,149	- -	- -	- -
Total available.....	18,303,879	19,499,100	20,915,000	+1,415,900
Transferred to:				
"Salaries and expenses, Office of Information".....	+ 4,847	- -	- -	
"Salaries and expenses, Forest Service, forest resources investigations".....	+ 16,700	- -	- -	
Anticipated supplemental.....	- -	-2,550,000	- -	
Total estimate or appropriation.....	18,325,426	16,949,100	20,915,000	

INCREASES OR DECREASES

The net increase of $1,415,900 in this item consists of the $573,089 decrease for overtime, and the following:

(1) Increases totaling $88,945 under Projects 1, 3, 5, 7, 10, and 11, for placing on a full-year basis in 1947, within-grade salary advancements which are estimated to be in effect for only a part of the fiscal year 1946.

(2) An increase of $508,500 under project "Maintenance of improvements other than roads and trails, etc.", composed of:

(a) An increase of $507,000 for maintenance of improvements on the national forests.

The Problem and its Significance: During the period of its existence from 1933 to 1942, the Civilian Conservation Corps accounted for most of the maintenance work on national forest improvements. Thereafter, in the fiscal years 1943, 1944, 1945 and 1946, the loss of CCC enrollees and the lack of sufficient appropriations made it impossible to adequately maintain these improvements. In an effort to meet the situation partially, maintenance standards have been generally reduced. Only through the lowering of standards has it been possible to do some of the most urgent maintenance jobs with the limited amount of regular funds available for that purpose. The result has been an increasingly excessive deterioration of the over-all investment, and the building up of an abnormally high maintenance and replacement job. The problem now is one of catching up on the maintenance work which has suffered from four years deferment.

The improvements on the national forests include thousands of small projects widely scattered over 179,000,000 acres of national forest territory. All of them are exposed to the elements under varying degrees of climatic conditions. Many of them are located at high elevations where damage from heavy snowfall and severe storms is extreme. Still others are unattended or unoccupied through long periods each year, resulting in more than ordinary deterioration. While many improvements on the national forests can be maintained at any season of the year, the majority must be maintained during a relatively short working season. Maintenance work on certain fire control, recreational and range improvements must be started in the spring immediately after the areas in which they are located become accessible, since the use of, or the need for, these improvements occurs very soon thereafter. Fire Control improvements such as telephone lines, lookout towers, fire-breaks, and guard cabins must be maintained in advance of the fire season - - at least to the point of usability. Range and other improvements must be maintained prior to public use in the early summer and spring months.

A tabulation of improvements will be found in the progress report on this project.

(b) An increase of $1,500 for placing on a full-year basis in 1947, within-grade salary advancements which are estimated to be in effect for only a part of the fiscal year 1946.

(3) An increase of $104,522 under the project "Allocation and issuance of grazing permits, supervision of range use by domestic livestock, range surveys and range management plans on National forests," composed of:

(a) An increase of $100,000 to employ additional ranger assistants and staff men needed to obtain more satisfactory range management; to provide for the resumption of range-survey work; to prepare and revise range-management plans and eradicate poisonous plants of the important western grazing forests.

Objective: To provide for continued use of national-forest ranges to the maximum degree consistent with their sustained grazing capacity and the protection of important watershed values.

The Problem: More than one-half of the 10,000 separate range allotments on the National Forests are in unsatisfactory condition. The total range acreage classified as problem or critical areas amounts to about 38 million acres. Problem allotments require much more intensive supervision and inspection than ranges in good condition. On many ranger districts where range management is very important and where critical problems exist, the District Rangers are unable to devote sufficient time to perform the range-management job to an acceptable standard because of the pressure of fire control, timber sale and other important duties that likewise need attention.

Without adequate manpower to initiate and supervise needed refinements in management, only one course is open, and that is reduction in number of livestock permitted on the range. This has been done to the

extent of 45 percent since 1918 in an effort to overcome the results of inadequate management and heavy overstocking during the first World War. Despite these heavy reductions, progress toward correcting unsatisfactory conditions and placing national-forest ranges on a sustained-production basis has been discouragingly slow. Recurrent and prolonged droughts and other adverse factors have actually reversed the trend over large areas. As a result the Forest Service is still faced with an exceedingly critical range problem. In many places further drastic adjustments, sometimes involving complete exclusion of livestock, will be needed to protect watersheds and restore depleted range lands unless such action can be avoided or ameliorated through application of other corrective measures. Further curtailment in grazing use of national-forest lands will seriously affect the economy of many dependent local communities and will result in a marked reduction in receipts from grazing fees.

Sheep and cattle cannot be grazed in rough mountainous country typical of National Forests, without injury to the soil and vegetation, unless handled skillfully under planned management. Without additional manpower to do range surveys, to prepare management plans and have them in all their varied and important aspects put into effect, and to step up cooperative relations with livestock associations, improvement adequate to the need cannot be expected. Stability of dependent communities, livestock production to meet national needs, and receipts to the Treasury will best be served by keeping arbitrary reductions to the minimum.

Work on range surveys and management plans was discontinued at the outbreak of the war. Prior to that time from $75,000 to $100,000 per year were allotted for surveys.

Surveys completed.....	About 45,000,000 acres
Surveys needed.....	About 40,000,000 acres
Management plans completed.....	About 7,500
Management plans needed.....	About 2,500

Development of management plans should go hand in hand with survey work. To complete the job on both surveys and plans will cost about 2½ cents per acre or in round figures about $1,000,000. The work should be attacked aggressively and completed in not less than five years.

There are about 440,000 acres of national-forest range upon which plants poisonous to livestock occur in sufficient abundance to constitute a serious hazard to livestock production. Losses from poisoning during the calendar year 1944 amounted to 4,262 cattle and 21,344 sheep, with a total value of about $450,000. Aside from losses suffered by owners of livestock, the existence of infested areas increases the cost to permittees of handling their livestock on the range. Small patches of poisonous plants often prevent efficient use of larger surrounding areas, which in turn decreases the return to the Government in the form of receipts from grazing fees.

Poisonous-plant eradication on the National Forests practically stopped with the discontinuance of the CCC program in 1942. A small amount of eradication has been accomplished with the cooperation of stockmen, but progress is slow and the program should be enlarged. Complete eradication of poisonous plants from all lands used for grazing is, of course, impracticable. It is proposed to eliminate poisonous plants from the more important spots and areas on the better soils and along water courses where such plants are more destructive to livestock and demoralizing to the orderly utilization of ranges. The problem is critical on 285,000 acres in the western National Forests. It is estimated that eradication work can be done at an average cost of $11 per acre.

Significance: Range for some 10 million head of livestock is involved, in addition, four and a half million acres of crop-producing lands and 22 million acres of other land in private ownership representing, all told, investments of around $330,000,000 are intimately tied in with the grazing use of national-forest lands. The headwaters of some of the most important water courses in the western States originate on national-forest grazing lands. The citizenry of a large number of dependent communities has built up its enterprise in the expectancy of sustained production of adjacent national-forest lands.

Plan of Work: It is planned to utilize the $100,000 increase to resume the range-inventory program; to assist with the development and application of up-to-date management plans; and to help perform the large and important job of planning and supervising the construction of fences, watering places, driveways, and other improvements required to get good management and fullest use of the range resources.

(b) An increase of $4,522 for placing on a full-year basis in 1947, within-grade salary advancements which are estimated to be in effect for only a part of the fiscal year 1946.

(4) An increase of $101,082 under the project "Enforcement of sanitary laws, garbage disposal, policing, and other requisite measures for safeguarding health and safety of National forest users," composed of:

(a) An increase of $100,000 to provide better supervision and control of public use of the national forests;

Objective: To provide for reasonably satisfactory conditions of sanitation and safety on those parts of the national forests which are heavily used by the public for various forms of outdoor recreation.

The Problem and its Significance: Each year several million persons enter and occupy the national forests for purposes of outdoor recreation, such as picnicking, camping, fishing, hunting, nature study, mountaineering, botanizing, etc. Proper protection of water supplies and public property make it essential to concentrate them on areas within which the dangers of such occupancy can be held to the minimum. Such concentration creates difficult problems of sanitation, garbage disposal and maintenance of facilities, and the need for supervision and provision against injury, forest fires and loss of life. To that end temporary personnel must be employed during the periods of maximum occupancy.

The areas requiring such special attention are as follows: Campgrounds 2,300; Picnic Areas 572; Camp & Picnic Areas 1,381; Swimming Areas 201; Winter Sports Areas 254; Organization Camps 55: These areas with an annual use by millions, normally will provide at one time for more than 480,000 people, with peak volumes of occupancy in excess of normal capacity. On these areas there have been established such facilities as sanitary and water systems, tables, stoves, shelters, parking spaces, roads and trails, swimming facilities, ski trails and ski slopes, etc. Their orderly use can be assured only by adequate supervision and the value of the facilities can be preserved only by systematic maintenance and care.

Even during the war year of 1943 there were 6¼ million recreational visits to the National Forest. The trend has already started back up, and under the conditions which can be expected to prevail now that the war has terminated there is every probability that the number of visits will equal or exceed the 18,000,000 recreational visits in 1941. The social value of this type of public land use is high; as is also its economic value to the regions which contain the national forests; to many of which the funds left by the recreational visitors are an important element in their economy.

Plan of Work: In the areas of smallest use and fewest facilities the necessary sanitation, clean-up and protective activities will be accomplished through part-time attention by the regular field organization, but in the areas of heavier use and more intensive development it will be necessary to employ additional short-term men for full time attention to the activity, making available for their use the materials and supplies required to keep the facilities in serviceable condition; the function of the men so employed generally to be to maintain proper sanitary and fire precautionary conditions, accomplish adequate garbage disposal, keep the areas in a clean and useable condition, repair the facilities that are damaged or deteriorated by public use; promote the safe and orderly use of the areas by appropriate supervision and control and establish safeguards against injury or loss of life.

Provision should be made for adequate inspection, planning and development, but the major financial requirement of the activity is for the provision of on-the-ground service either as a part-time service or through the specific employment of campground caretakers for periods of from three to six months of the year; plus the materials and supplies required by such men to maintain the areas and facilities in serviceable condition.

(b) An increase of $1,082 for placing on a full-year basis in 1947, within-grade salary advancements which are estimated to be in effect for only a part of the fiscal year 1946.

(5) An increase of $484,440 under the project "Land-use management on National forests, including rental of land; land classification, action on claims entered under public land loans, location and posting of National forest boundaries; general surveys, plans and maps, aerial photography, land exchanges," composed of:

(a) An increase of $479,000 to provide for photography and mapping of forest areas for which photographs and maps are needed for resource studies, forest utilization, protection and administration.

The Problem and its Significance: For only about 15 percent of the national forests and immediate adjacent areas are existing maps adequate in scale, accuracy and detail available. Maps in use are obsolete. The need for and the use of photographs and maps is currently great and is rapidly increasing. Consequently the work necessary to provide adequate photographs and maps to meet the immediate needs and those of the foreseeable future should be undertaken at the earliest practicable date.

Topographic maps (relief shown by contours) of 284,767 square miles and planimetric maps (drainage and culture but not relief) of 60,000 square miles are needed for the national forest areas. Prior to starting control and actual mapping, aerial photographs will be needed. A duplication of 40,000 square miles exists between the needs for topographic and planimetric maps because of the urgency of need for planimetric maps and less immediate need for topographic maps, it is planned to prepare planimetric maps first and by adding contours convert them to topographic maps when such are urgently needed.

These photographs and maps are required for general protection, administration and planning. They are essential to fire control in accurately locating fires, formulating and executing fire suppression plans; to range management in mapping useable range types, estimating forage production and preparing management plans to guide range administration; to timber management in locating operable timber stands, estimating volumes, distinguishing forest types and between immature and mature timber, making timber sales and generally in making management plans for sustained yield; to road location in selecting routes of travel for protection and use of resources, especially timber; for locating and layouts of administrative and special use areas; and to practically all other forest activities.

Plan of Work: The funds requested for fiscal year 1947 will be used to secure photography of approximately 20,000 square miles; secure horizontal and vertical control of approximately 4,000 square miles already photographed, prepare topographic maps of approximately 5,000 square miles, reproduce completed maps of approximately 5,000 square miles, and reproduction of Forest administrative maps due to exhaustion of supply. These maps may be standard or nonstandard. All photographic, control, and mapping work will conform to Federal Standards. Approximately 60 trained and skilled technicians employed on war work during the fiscal year 1946 and paid from working funds will be released from this work during fiscal year 1947 and will be available for the proposed work. These will be supplemented by both skilled and unskilled personnel.

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(b) An increase of $5,440 for placing on a full-year basis in 1947, within-grade salary advancements which are estimated to be in effect for only a part of the fiscal year 1946.

(6) An increase of $701,500 under the project "Reforestation of denuded National forest areas," composed of:

(a) An increase of $700,000 for reforestation of denuded National Forest lands throughout the United States to carry forward the tree-planting program.

The Problem and its Significance: To date some 1,200,000 acres of National Forest land have been planted. According to present estimates, which are subject to increase as more land is acquired, or as there develop acreages of burns that should be planted, there remain to be planted on National Forest land approximately 2,200,000 acres which are not producing forest products and will not in a reasonable time unless planted. In addition there is a large acreage of about 1,000,000 acres of "fill in" or "stand sweetening" planting on good sites in timbered areas which are not fully stocked. These two general classes of planting constitute the "initial phase" of the planting program on National Forest lands. Once the initial phase is completed, the size of the planting program will be largely governed by the need for planting in connection with future land acquisition, burns, timber sales in types requiring planting and the advisability of both reforestation planting and fill-in planting on the poorer timber growing sites, planting of which is of low priority until the better sites are planted.

The Forest Service is setting a goal of completing the "initial phase" of this planting program in the next 15 years. To meet this goal will require planting an average yearly acreage in excess of 215,000 acres. During period of the Civilian Conservation Corps Program there was one year when this rate was reached.

The previously existing planting program was curtailed during the war. Prior to the war there were 25 tree nurseries in operation in 18 different States for the production of planting stock for National Forest reforestation.

Beginning in 1945, a program was undertaken to bring the Forest Service nurseries back into production so that the planting program could be resumed at the close of the war.

Since it takes from one to four years to produce plantable stock after the tree seed is sown in the nurseries, the Forest Service is now in the position of having started to expand its nursery production capacity, but without yet having brought that expansion up to the rate necessary to complete the 15-year planting objective. It will be necessary to increase the anticipated fiscal year 1947 rate of production nearly five times in order to meet the 15-year planting objective.

Action to increase nursery production anticipates that increased funds will be made available to cover the cost of planting the stock as it becomes ready for planting. During fiscal year 1947, it is conservatively estimated that there will become available for planting on regular National Forest planting projects at least 45 million little trees. The 1946 base includes funds sufficient to plant some 26,000,000 of these trees. Consequently, there is need for additional funds during fiscal year 1947 to cover the cost of field planting of the estimated balance of 19,000,000 trees. The additional cost would be $258,000.

During fiscal year 1947, it will be necessary to continue the program of increasing nursery production capacity. This will require putting back into production additional nurseries that have been closed and opening up additional blocks in nurseries that have been partly opened. During the year it is planned to expand production so that there will be approximately 95 million trees available for planting in the succeeding fiscal year, weather and natural seed supplies permitting. This will require additional funds, in excess of the funds now available for the purpose, of approximately $212,000. This is calculated on the basis of $4.80 per M for 95 million trees, less the amount available in 1946.

A necessary step in completing the initial phase of the planting program in the next 15 years is to start new nurseries in parts of the country where the existing nursery capacity is obviously too small to handle the foreseeable planting job. Development of a new nursery in Oregon and at least one new nursery in California was under immediate consideration prior to the war. A site for one of them has been acquired and intensive study of two possible sites for the other one is now being made. The development of these new nurseries must get underway immediately to meet the 15-year objective. During fiscal year 1947 additional funds in the amount of $115,000 will be needed to commence development work at these two new nurseries.

Another activity which was interrupted by the war was the release of planted trees from brush competition. Some sites that must be planted are so brushy that unless the planted trees are subsequently freed successful planting is not possible. A fair start on this type of work in the Lake States was made prior to the war, but there remain still some substantial acreages of plantation which will be lost or on which growth of trees will be seriously impaired if plantation release work is not done soon. It is estimated that some 12,000 acres can be so treated during fiscal year 1947 at an average cost of $7.00 per acre. In the South, it is necessary to clear scrub oak and other vegetation from some of the sites on which longleaf pine is to be planted, and once or twice in the life of a stand to perform brown spot disease control in both planted and natural stands. Some of this site preparation work should be done every year in preparation for the next year's planting. The equivalent of 7,000 acres at $4.50 an acre should be so treated during Fiscal Year 1947. Thus additional funds in the amount of $115,000 will be needed for plantation release and site preparation work.

Plan of Work: If this additional appropriation is made it will be spent in the following manner:

To plant 19 million trees available from the nurseries during 1947.....	$258,000
For operation of nurseries and expansion of nursery capacity.....	212,000
For development work during F.Y. 1947 on new nurseries, one in Oregon and one in California...	115,000
For 7,000 acres of planting site preparation, and 12,000 acres of first priority plantation release.....	115,000
Total	$700,000

(b) An increase of $1,500 for placing on a full-year basis in 1947, within-grade salary advancements which are estimated to be in effect for only a part of the fiscal year 1946.

CHANGE IN LANGUAGE

The existing authorization for the purchase of aircraft is proposed to be reduced from eight in the fiscal year 1946, to four in the fiscal year 1947.

Aerial transportation of fire fighters, "smoke jumpers", supplies and equipment to back-country fires and to fire control stations has proved itself during the war years. It is proposed to purchase not more than four aircraft in 1947 for use in those locations and situations where aerial transportation and reconnaissance offers advantages over ground methods.

WORK UNDER THIS APPROPRIATION

General: This appropriation covers all activities relating to the administration, protection and development of the national forests except those provided for by the special appropriations for roads and trails, for the large forest fires which the seasonal fire organization cannot suppress, white pine blister rust and forest land acquisition.

Objective: To manage, protect and develop the national forests and to utilize their timber, water, range, recreation, wildlife, and other resources in a manner which will render the greatest possible service to the Nation as a whole.

Problem: Within the national forest boundaries is an area of 228 million acres, of which 179,380,000 acres are in Government ownership. Geographically this area reaches into 40 states, Alaska, and Puerto Rico. Many tracts of privately owned lands are interspersed within the Federal holdings.

The protection and management of so vast an area presents difficulties and complexities not commonly found in many other governmental undertakings. National forests are managed under the multiple use principle. This means that practically all areas are used for, or serve, more than one purpose or objective. For example, 50 percent of the area within the national forests of the continental United States serves five different purposes: (1) timber production, (2) watershed protection, (3) forage production, (4) wildlife production, and (5) recreation. An additional 28 percent serves four purposes in varying combinations. An additional 21 percent serves three purposes. This leaves only 1 percent of the total which is reserved for one purpose exclusively, mainly, campgrounds and special use areas such as summer home sites, pastures, corrals, etc.

The above clearly demonstrates the necessity of careful planning in the management of the national forests, and brings into focus the interests which continually conflict and which must be reconciled by the managers of the national forest properties.

The protection of national forests from fire, insects, disease and trespass is made difficult by the large area to be protected, the general inaccessibility of the national forests, the many thousands of miles of exterior boundary, and the impossibility of taking preventive action when dealing with such a problem as lightning-caused fires (5,102 in the first ten months of 1945).

Significance: The following is indicative of the economic importance of the national forests:

(a) The area within the national forest boundaries is equivalent to some 10 percent of the area of the continental United States.

(b) More than 23,000 sales and permits were granted in the fiscal year 1945 for the cutting of timber from the national forests. These contracts cover periods ranging from a few weeks to ten years.

(c) The national forests produced a cash income to the Federal treasury in excess of 16 million dollars in 1945 from the sale of timber products, grazing, and land rentals.

(d) They provide range for over 10 million head of domestic livestock.

(e) Nearly 4,000,000 people who live in and near the national forests are supported in whole or in part through the management and utilization of them and their resources.

(f) They provide watershed protection of municipal water supplies for cities and towns with a total population of approximately 6,000,000 as well as water supplies which are immensely valuable to agricultural interests.

(g) They provide a habitat for a large part of the big game animals, birds, and for millions of small game animals and furbearers.

(h) They provide a measure of assurance of a future timber supply. In 1945, 3,145,000,000 feet out of an estimated allowable annual cut of 6,500,000,000 feet were removed from the national forests. The national forests are assuming increased importance as a source of lumber because of the rapid depletion of timber on private lands.

(i) They provide areas of land in large blocks already in Government ownership which, during the war, were used for military purposes. In excess of 2,900,000 acres of land were turned over to military agencies by Act of Congress, executive or public land order, or by special use permit during the war, the immediate availability of which obviated the expenditure of large sums of money in acquisition and rental costs. Most of these lands are now being turned back to the Forest Service for administration.

General Plan of Work: To facilitate administration, the national forest area is divided into 10 regions, 135 national forest administrative units, with 749 ranger districts averaging approximately 300,000 acres in size, or 7-1/2 times the area of the District of Columbia. The personnel of the basic organization, which is charged with the field administration and general operation of these geographical units, is also responsible for the protection of the national forests from fire, insect and tree-disease epidemics, and trespass, and for the integration of their management with economic and social problems of both national and local scope, in order that the natural resources of the national forests will contribute as fully as possible to the solution of such major problems as the production of needed timber and other forest products, utilization of forage without injury to the vegetative cover, flood control

in major and minor watersheds, demands for outdoor recreation by millions of people, and the permanency and continued prosperity of dependent communities. The members of this basic organization manage all activities on their respective geographical units.

The basic organization is supplemented by fire guards and lookouts during the fire season; by temporary laborers for insect control, planting, maintenance, construction, and survey projects; by cruisers, scalers, and lumbermen engaged in timber activities; and by the year-long technicians who are necessary for the proper handling of functional activities such as fire control, timber sales, range management, and reforestation.

Progress and Current Programs:

1. General management, operation and regulation of National Forest properties, including enforcement of Federal Laws and regulations applicable to the national forests: This project provides for the basic regional, forest and ranger district organization, the members of which are directly responsible for supervising, managing and guiding all of the programs and projects in progress on their respective units. This means they must constantly readjust their programs of work to take into account changing conditions and the impacts resulting from varying economic pressures. They are the active managers of the land and other resources which comprise the National Forests and which constitute a business enterprise of considerable proportions. The business-like administration of these huge properties for the public good is a complicated task requiring the highest type of management in order to coordinate and integrate the activities which encompass strict attention to such matters as (a) the economic conditions which bring about varying demands for national forest timber and other forest resources; (b) the current protection needs which vary in intensity with seasons and weather; (c) the periodic handling of emergencies resulting from fires, flood, and insects; and (d) the shifts in population which are responsible for variations in the intensity of use and demand.

2. Maintenance of improvements other than roads and trails: This is a recurrent project. The size of the task to be performed in any one year is determined by the number of improvements in existence at the beginning of the year multiplied by the unit cost of maintenance. The amount of maintenance work which can be performed is limited by the amount of money available for direct allotment to maintenance work, plus the contributed time which can be made available by forest guards and standby crews who are primarily employed for fire control purposes but who are assigned to other duties during those periods when danger from fires is low or non-existent.

During the fiscal year 1945 only a part of the total maintenance job was performed. Preferential treatment in the allocation of maintenance funds was given to those classes of improvements which must be maintained to the point of usability in advance of the

field season. Improvements in this category are telephone lines, fences, lookout towers and water development projects. With the bulk of the funds available going to the above classes of improvements very little remained for allocation to improvements of other kinds. Some of these improvements were maintained by fire guards and standby crew members, but the locations of these employees are dictated by fire control requirements, and only a small part of the total job can be performed by these men.

The following tabulation of improvements in existence at the present time shows the size of the improvement maintenance job on the National Forests:

Improvement	No. of Units (Miles or No.)
Telephone Lines	61,433
Fire breaks	5,109
Airplane landing fields	63
Lookout houses, towers, and observatories	2,944
Pump sets	530
Dwellings, headquarters	1,038
Dwellings, temporary stations	2,283
Offices. all	732
Barns, garages and warehouses	2,381
Fences, headquarters	1,141
Fences, temporary stations and plantation	2,834
Water development projects, headquarters	1,191
Water development projects, temp. stations	928
Gas and oil storage	103
Sanitary systems	2,263
Light, power, and central heating plants	208
Bunk houses, barracks, etc.	763
Other improvements, headquarters	3,098
Other improvements, temporary stations	3,752
Range fences and corrals	22,804
Stock driveways, range (includes bridges)	6,292
Water developments, range	13,282
Camp grounds, public service	3,629
Camp ground buildings	5,469
Water systems, camp grounds	4,502
Dams, all types	261
Special use facility areas	584

3. Forest Fire Control, Including Prevention of Fires and Maintenance of a Detection and Smokechaser Organization: The country-wide undertaking of protecting national forest resources from fire went forward under many difficulties during the calendar year 1945. The many handicaps during the period which arose from shortage of qualified personnel and from old or obsolete equipment were offset to a considerable degree by the very fine cooperation received from the general public and from the armed services. A great many public

spirited citizens and corporations cooperated wholeheartedly in the national wartime forest fire prevention campaign and many gave a great deal of their time voluntarily both to preventing and suppressing fires. The armed forces contributed approximately 50,840 man-days of fire control help plus supplies and transportation when large fires occurred. The fire season of 1945 throughout the West was the most difficult of the last ten years.

A cooperative project with the Army was organized to cope with the threat of fires from Japanese balloons. These balloons first began to appear along the West Coast of the U. S. A. late in 1944 and became numerous in the spring of 1945. They carried incendiary and other bombs designed to distribute fire over considerable areas. For security reasons information on these incendiaries and the locations at which they were dropped or at which the carrier balloons were recovered was withheld from the press until the summer of 1945. By June 30, 1945, a total of 264 balloons or parts of balloons had been recovered. By the end of September the total number of locations where balloons, parts of balloons, or incendiaries had been found had increased to 298. Several factors made the Japanese attempts almost entirely ineffective and no forest fires of consequence resulted. The most important single factor appeared to be meterological conditions between Japan and the West Coast of the U. S. which made it much easier to get the balloons inland during the winter and early spring months when they did no damage. Fortunately very few arrived in hazardous forest country after the fire season was fully established. In the meantime, both military and Forest Service forces had been fully organized and alerted to insure against fires and loss of life from this threat. Some balloons were shot down before they reached land and many others were made harmless by prompt discovery and follow up at the points where they stopped temporarily. A few fatalities occurred. Several fires of unknown origin might have been caused by these incendiaries but proof seems to be lacking in each instance and in any case such fires were not frequent enough to contribute materially to the problem.

In the Northwest the smokejumper organization of 80 trained parachute firemen was increased to 120 in the summer of 1944 and to 185 in the spring of 1945 as additional insurance against the potential threat of Japanese incendiaries. The accomplishments of these smokejumpers have been increasingly impressive. During 1944 they made 526 parachute jumps to 180 going fires in the backwoods forest country Results from the increased organization during 1945 have not yet been fully summarized but are even more impressive and were particularly significant early in the season because of the scarcity of men and equipment to accomplish the work by ground methods.

Reorganization and adjustment of fire fighting forces to peacetime conditions is one of the urgent problems to be solved in this activity. At the beginning of the fiscal year 1946, after practically all contracts of employment with members of summer protection

organization had been comsummated, the newly established 40 hour week affected all fire control positions and required considerable replanning. The problem is complex because the nature of the work is poorly adapted to prescribed days and hours. Wage rates advanced greatly during the war period and have substantially increased fire control costs.

4. Control of tree and range destroying insects and rodents on National Forests: A severe outbreak of bark beetle and budworm infestation in the spruce type in Colorado was the most important occurrence in the field of insect problems on the National Forests in Fiscal Year 1945. Working in close cooperation with the Bureau of Entomology and Plant Quarantine, the Forest Service undertook technique development projects in this spruce type. So far, entirely satisfactory control measures have not been developed for the overmature inaccessible stands involved. One salvage logging operation was started in this spruce type infestation; salvage logging is apparently the most feasible control measure now available. The epidemic of bark beetles in the Wasatch Mountain area in Utah continued severe and there were also scattered infestations of bark beetles in southern Idaho. There also were two outbreaks of bark beetles in white pine stands in the Inland Empire area and one locally severe infestation in the ponderosa pine of northern California. Control measures were undertaken in all of these listed outbreaks.

Discovery of a light infestation of spruce budworm near the White Mountain National Forest in New Hampshire and another one on the Green Mountain National Forest in Vermont is potentially a very serious insect problem. Spruce budworm has been rampant in the spruce-fir stands of Canada where serious infestations over large areas have caused heavy damage. Prior to the recent discovery of these two light infestations, it had been hoped that there would be a four or five year interval before the infestation spread South to the New England National Forests. Such protective measures as can be accomplished through logging will be commenced in the fiscal year 1946.

The Forest Service continues to cooperate with the Bureau of Entomology and Plant Quarantine in surveys for the purpose of keeping a close check on possible new sources of epidemic attacks as well as on conditions in areas where there are known potentially serious infestations.

5. Timber and Forest Products Sales, Free and Administrative Timber Use, Timber Surveys, Management Plans, and Timber Stand Improvement: Fiscal Year 1945 was a difficult year for lumber production. Throughout the country as a whole lumber production dropped 10.6% from the preceding year. The drop was caused by numerous factors: shortages of man power in both mills and woods, both in numbers and in skilled personnel; relatively less efficient workers; adverse weather

factors, particularly late this winter and early this spring; shortage of equipment and parts, particularly woods equipment, and delay in obtaining parts when they were to be had; and some difficulties over log and stumpage supplies.

Likewise, Fiscal Year 1945 was a difficult year for volume of timber cut from the National Forests. The volume cut was 3,145,000,000 board feet, a drop of 5.6% from the all-time high cut of Fiscal Year 1944. This drop was largely concentrated in the fourth quarter cut from the National Forests in Oregon and Washington, where adverse weather plus a culmination of other factors which have adversely affected log production caused a substantial decrease from the previous year's fourth quarter cut. In spite of this drop, the availability of National Forest stumpage has continued to make it possible for many mills and logging operations to remain in production when without this stumpage they would have been forced to close for lack of raw material.

The timber sales business on the National Forests in the Fiscal Year 1945 was carried on under increasing difficulties of man power and the necessity of sparing some qualified men from direct sales administration work for the highly essential job of cruising timber and preparing additional tracts for sale. During the preceding three years, the shelf of prepared sale areas reached a point of near exhaustion in some Regions and it was imperative to restore in part at least the backlog of areas to which new cuttings could extent. As a result, it was necessary in some cases for already strained man power resources to take on additional work in both sales supervision and sale preparation. The difficulties of locating and placing qualified personnel and of training inexperienced help in those lines of timber sale administration for which they could qualify have been enormous.

The need for continuing work to put in readiness areas from which new sales can be made continues most urgent. This need involves more than preparing bodies of timber that will be sold in the next two or three years. It involves in quite a few areas a stock-taking to see specifically what the war pressures did to the over-all timber supply situation on a working circle and to see what adjustments can or should be made in estimates of timber available as a result of rather marked changes in heretofore existing standards of accessibility. There is now prospect for a fairly stable market for species and sizes that were not salable before the war. Operators have developed ways of getting out timber which was formerly considered inaccessible. These changes have a major bearing in some areas on how long we can continue to meet urgent peace-time demands without seriously undercutting future prospects of sustained yield production and community stability.

Special work to expedite production of war-needed lumber by the making of non-competitive or short-term-advertising sales in accordance with authority under the First War Powers Act

was continued. During the year, 28 non-competitive sales for this specific purpose were approved. Every one of these sales required special investigating and reporting. As a result of these 28 sales, 24 sawmills that otherwise would have had to curtail production or close down were kept in operation producing lumber for war needs.

Work to investigate possible Federal or cooperative sustained yield units under Public Law 273 - 78th Congress was carried on to the extent qualified man power could be located and financed. Generalized surveys to determine the existence of potential sustained yield units were undertaken in all Regions. This work was followed up by more detailed surveys or studies in some of the more pressing cases. One case was carried into the preliminary negotiation stage and studies in others are well advanced.

6. Allocation and issuance of grazing permits, supervision of range use by domestic livestock, range surveys, and range-management plans on National Forests: Holding the Line: Ill-advised increases in the number of permitted stock due to the exigencies of World War I resulted in overgrazing, the results of which remain a major problem of national-forest range administration. Consequently the current program of restricting stocking to the sustained capacity of national-forest ranges has resulted in less damage to the forage resource and a greater tonnage of meat and wool. This conservative use of the range, despite widespread pressure for increases in permitted numbers and in view of the results, is considered the major accomplishment of the year. The time and effort required were most substantial.

Issuance of Permits: During the calendar year 1944, permits were issued to 34,000 owners to graze 1,316,800 cattle, 4,287,900 sheep, and 7,100 swine. The total permitted use was slightly under that of 1943.

Receipts during the fiscal year 1945 were $2,158,626, a reduction of $300,000 from F. Y. 1944 brought about by the application of the formula for establishing annual grazing fees, a reduction of number of stock on the range, and the discontinuance of "split-fee" payments in fiscal year 1944.

Range Surveys: Range surveys were at a standstill for the past several years but provision was made in the 1946 appropriation for resumption of this activity to about 50% of the prewar level. About 40 million acres are yet to be surveyed.

Cooperative Contacts: Local Forest Officers - rangers and supervisors on important grazing Forests - attended meetings of about 800 local associations and advisory boards where plans for handling the ranges were discussed and agreed upon for the coming year.

7. Protection of the wildlife resources, preservation of forest conditions conducive to the propagation of wildlife, reduction in number of game animals in overstocked areas, wildlife surveys, and management plans: Fifty check plots were established on the forests in Colorado for use in checking forage utilization and to determine the degree of conflict between game and livestock. Many more were installed in other states. Big game management plans made in cooperation with the States have been completed for the national forests in Wyoming and South Dakota in addition to eight deer and two elk management plans in Utah.

Sixty-three special elk and deer hunts were held to adjust the number of game animals to the sustained forage resource. In the Southern Region 5,000 hunters participated in one managed deer hunt on one range district of the Ozark National Forest, Arkansas.

Range damage from overpopulations of game occurs generally in various degrees in the six western regions. Such problems are complicated by factors which do not have to be considered in the management of livestock. The important differences are lack of fundamental facts, difficulty of counting game animals, and dual administration between the States and the Federal Government. Of these factors, correct information on the carrying capacity of game ranges, and proven methods of wildlife management and manipulation are most important.

8. Enforcement of sanitary laws, garbage disposal, policing and other requisite measures for safeguarding health and safety of National Forest users: Because of their extent and diverse natural attractions the National Forests necessarily are subject to an enormous volume of public use for purposes of outdoor recreation both winter and summer. To serve such visitors and to protect the National Forest resources from additional fire risks and insanitary measures, it was found necessary and desirable to provide simple facilities and structures for shelter and sanitation so that the general public might continue to enjoy the benefits of the National Forest environment without creating undue hazards to the public safety, welfare, and property. At the end of calendar year 1940, through regular and emergency funds there had been constructed or made available for recreational use and enjoyment of the National Forests, approximately 4250 camp and picnic areas, 201 swimming areas, 254 winter sports areas, 54 organization camps, and 11 hotels and resorts, the latter group constructed for the most part by other agencies and turned over to the Forest Service for administration. Additionally, up to January 1, 1941, there had been constructed under special use permit from the Forest Service over 300 organization camps, approximately 500 hotels and resorts, and in excess of 11,500 recreation residences.

The peak year for the use of these facilities and services was 1941 when recreation travel was at its height so far as the National Forests were concerned. During the year ending December 31, 1941, it is estimated that those visits covered a period of over

26 million man days, or an average of $1\frac{1}{2}$ man days for each of the 18 million or more visits. During the same period over 28 million visits were recorded as having been made by persons using the National Forest highways, roads, and water routes to enjoy National Forest scenery. Comparatively, in calendar year 1944, less leisure time and gasoline and travel facilities resulted in a decrease in use of about 59%. Nevertheless, the best official records and estimates indicated almost $7\frac{1}{2}$ million visits, representing $16\frac{1}{2}$ million man days, for an average stay of $2\frac{1}{4}$ days per visit. Use of roads, highways, and water routes approximated 11 million visits, 3-3/4 million man days or an average of more than 1/4 man day per visit.

The decrease of use was an average one, not necessarily representative of all areas and locations. Abnormal population shifts caused an upset in the ratio of planned developments to expected use. Thus during 1944 some areas received such heavy use as to require additional sanitary installations and maintenance services while others received only slight use. It has been difficult to maintain an acceptable standard of clean-up and maintenance on heavily-used areas. Maintenance and upkeep have been cut to the absolute minimum for safety, sanitation, and preservation of the Government's investment in the facilities. Essential policing for the enforcement of sanitary laws, garbage disposal, and other measures requisite to safeguard the health and safety of National Forest users has been continued to the extent possible, but in many instances it has been necessary to put the public on notice that its use of the facilities must be at its own risk.

Since V-J day there has been a tremendous increase in the number of recreational visitors to the National Forests. Removal of restrictions on the use of gasoline, availability of more tires and cars, pent-up demands for outdoors recreation, availability of war-time savings and other post war conditions and attitudes will undoubtedly result in a flood of visitors to the National Forests during the summer season. Consequently greatly increased provisions will have to be made for maintenance and policing of camp grounds in the summer of 1946 than during recent years.

9. Land use management on the National Forests, including rental of land; land classification; action on claims entered under the public land laws: During the war statistical reports showing the fluctuation and turn-over in such activities as the use of the National Forests under special use permit, claims by private parties to National Forest lands, and land classification were discontinued.

At the end of fiscal year 1941, the Forest Service had in force 44,010 special use permits covering nearly 2 million acres of public land, and over 20 thousand miles of telephone line, railroads, roads, pipe lines, drift fences, etc. Approximately 15%, or 6,621, of these permits were initially issued during the year, while 13%, or 5,738, of the permits in existence at the close of fiscal year 1940

were revoked, abandoned, or expired during fiscal year 1941. The turn-over in such permits requires administrative action additional to the normal supervision of uses which is requisite for the protection of government resources and the public interest.

Additional to the ordinary special use permits, 8 authorizations by the Forest Service or Department of Agriculture for the use of 17,522 acres of National Forest land were issued to war agencies during the fiscal year 1945 for the training of armed personnel and other war purposes. Four areas, aggregating approximately 361,656 acres, were released by such agencies; so that the net National Forest area under permission to occupy and use for war purposes by Army, Navy, and other military and related establishments was around 2,613,692 acres as of June 30, 1945.

Occupancy of National Forest lands for purposes of commerce, industry, recreation, summer homes, residence and resort have continued. Fees paid for special uses of National Forest lands during fiscal year 1945 totaled $2,224,290, an increase of $1,768,998 over the previous fiscal year.

At the end of fiscal year 1945, 60 oil and gas leases issued by the Secretary of Agriculture under authority of the act of March 4, 1917, were outstanding on lands under the jurisdiction of the Forest Service. Revenues from those leases in the form of bonuses, rentals, and royalties accounted for the above increase in fees.

The end of the war brought about a new cycle of interest in the availability of National Forest lands for homestead purposes, especially on the part of ex-service men. During 1945, numerous inquiries about lands subject to the Forest Homestead Act of June 11, 1906, were answered, as were those relating to homesites which may be obtained under the act of March 3, 1927, as amended by the act of May 26, 1934, on lands within the National Forests in Alaska. The majority of lands classified under the Classification Act of August 10, 1912, for homestead entry under the act of June 11, 1906, have either been entered and gone to patent, entered and abandoned, or never entered because of lack of sufficient positive agricultural values or economic and social needs. Veterans' requests may necessitate reexamination of borderline areas to determine whether conditions have so changed since the date of classification as to warrant reclassification and listing for entry under applicable homestead laws. However, as a result of 30 years experience, it is apparent that practically all National Forest lands suitable for entry under the Homestead law have been entered and no appreciable number of favorable re-examinations can be expected. Within and contiguous to the National Forests are almost two hundred thousand rural families. Of these, approximately 2,500 families occupy National Forest land, such occupancy in most instances being in effect at the time the National Forest land was acquired. The rehabilitation of the lands and structures thus occupied is regarded by the Forest Service as a highly desirable

objective. Conditions created by the war have necessitated a cessation of positive activity in this field, but its resumption at the earliest practicable date is anticipated. Waiver or modification of fees to such occupants as are totally or partially unable to meet them because of the submarginal character of the land and lack of other means of support, was authorized by the Secretary several years ago and continues in effect where proof of such situation is made to to the forest officer authorized to make such waiver or reduction of fees.

During the fiscal year 1945 the Secretary of Agriculture approved 115 exchanges under the Act of March 20, 1922 in which the United States will receive 294,093 acres, more or less, valued at $2,679,486 and will grant in exchange 177,647 acres valued at $1,033,250 and National Forest stumpage valued at $1,460,330.

Accurate maps are essential for adequate and efficient protection, development, and administration of land and resources. These are generally prepared from aerial pictures which serve not only for map production but are valuable for practical resource activities such as fire control, range surveys, determination of the distribution and density of timber, and many other purposes. Seventy-one individual mapping projects were assigned to the Forest Service by the Navy Department on a working fund basis. This activity is being curtailed as individual projects are completed. Mapping of National Forest areas is being resumed as men are released from the Navy mapping projects.

10. Protection, development and management of the water resources of the National Forests: Increasing attention has been given to the effect of soils in the management of the range resource; and in the management of timber sale areas, rehabilitation of conditions favoring stability of soils is being increasingly provided as one of the terms of National Forest timber sale contracts. Emphasis in the California Region has been given to instruction of field personnel in their responsibilities in connection with watershed management activities. A soil survey of a portion of the Mendocino National Forest was carried on in cooperation with Federal and State agencies having as one purpose a determination of type of survey needed to give managers of national forest lands essential information on soil conditions on watershed and wild lands. A preliminary watershed management plan for the Pike National Forest has been prepared. A start has also been made on water resource surveys of several western national forests, as the beginning of development of watershed management plans.

During the past year the City of Seattle completed an intensive study of the Cedar River Watershed on the Snoqualmie National Forest looking to the proper permanent management for municipal water supply purposes. The Forest Service is cooperating with the city officials in working out the timber management plan and land acquisition program for the watershed. Advice has also been given the Portland,

Oregon, City Council, on policy of management of the city's Bull Run Watershed, and cooperative investigations with officials of the City of Walla Walla, Washington, concerning management of the city's Mill Creek Watershed are under way. The management of municipal water supplies and watershed areas is receiving increasing attention in the multiple-use scheme of land management. A small amount of meadow erosion control, channel clearing and stabilization of road cuts and fills has been accomplished with the aid of public service camps and prison camps.

Contributions of data and other material to, and reviewing comments on, reports by the Reclamation Service on the development of water and resources of the major drainage basins west of the Great Plains, have been and are being made. Cooperative work with Soil Conservation Districts has increased slowly in the development and review of working plans involving forested lands. A large number of snow gage readings and some stream gage readings have been taken and provided the Division of Irrigation of the Soil Conservation Service and recommendations made for increasing the number of snow surveys for additional information needed in national forest watersheds. Basic data of various kinds have been furnished the U S. Engineering Division and assistance rendered this agency on the revision of the snow line in a test of this basis for forecasting water supplies in the Flathead River drainage.

In Missouri the Forest Service has participated with Federal and State agencies in a joint land-use and management survey of lands in the Meramec Watershed for the purpose of determining modifications in land management practices in the interests of flood control and the local economy.

11. Construction of improvements other than roads and trails: In the main, construction work on the National Forests was deferred during the war. However, a need occasionally arose for the construction of a telephone line, drift fence, water improvement or other type of project to facilitate the protection effort, the cutting of timber, or the management of stock on National Forest ranges. Expenditures in the fiscal year 1945 were restricted to projects which could not be deferred without weakening the protection or resource management effort.

12. Reforestation and revegetation of denuded National Forest areas:

Reforestation: Emphasis in reforestation work was directed towards the effort to restore some of the pre-war nursery production capacity, to build up a supply of seed, and to do what planting could be done by use of conscientious objectors, Mexican nationals, prisoners of war, and volunteer workers. At three of the nurseries which have been entirely shut down, a part of the seed bed area was prepared for production and sowed with tree seed. At 10 other nurseries various operations were undertaken to maintain or increase production levels for stock out-put next year and in subsequent years.

During the year a start was made on reanalyzing the size of the initial planting job that remains to be done, and restudying the relative priorities of the various planting sites and types in the light of natural changes that have occurred in the last few years when the planting program has been curtailed.

Range Reseeding: A total of 11,366 acres of depleted national-forest range was reseeded to grasses and legumes in F. Y. 1945. About 99 percent of the area, or 10,558 acres, were reseeded in the Intermountain Region (Utah, Nevada, Southern Idaho, and Western Wyoming) where range reseeding has progressed beyond the trial stage and is being conducted on a practical project scale. Much of this work was financed from cooperative work funds, with some contribution of time on the part of permanent Forest Service personnel. The areas seeded in F. Y. 1945 are adding new and conclusive evidence that reseeding of depleted range lands pays substantial dividends in increased production of meat, hides, and wool, increased revenues from grazing fees, in stabilizing the livestock industry, and healing sore spots on important watersheds.

Congress appropriated $100,000 for range reseeding on the National Forests for F. Y. 1946. This money is being used to reseed areas only on range types and under conditions for which sound reseeding methods have been developed. Highest priority is being given to areas where range and watershed conditions are most critical and where an increase in forage will do most to help stabilize existing communities. Plans for individual projects will be prepared or checked by qualified technicians, and the work will be coordinated with that being done by the research organization.

(d) Fighting Forest Fires

Appropriation Act, 1946	$100,000
Budget estimate, 1947	100,000

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
1. Fire suppression	$1,723,475	$100,000	$100,000	- -
2. Protection of unappropriated public forest lands	160,106	- -	- -	- -
3. Overtime pay	92,398	- -	- -	- -
Covered into Treasury as miscellaneous receipts, Public Law 529	30	- -	- -	- -
Unobligated balance	82,991	- -	- -	- -
Total estimate or appropriation	*2,059,000	100,000	100,000	- -

* Includes regular annual fire fighting deficiency appropriation. Estimate for this purpose for fiscal year 1946 has not yet been submitted.

WORK UNDER THIS APPROPRIATION

1. Fire suppression: This project covers emergency fire control expenditures on the national forests. Administrative restrictions placed upon the use of these funds by the Forest Service provide that expenditures shall not be made therefrom until forest fires have actually started. An exception is made to this rule, however, when fire conditions become so critical that the regular protective organization, which is financed from the appropriation "National forest protection and management," is unable to cope with the situation and when, therefore, the temporary employment of additional guards will clearly reduce expenditures for fire fighting.

(e) Forest and Range Management Investigations

(Proposed consolidation of "Forest Management" and "Range Investigations")

Appropriation Act, 1946:			
Forest management			$970,900
Range investigations			337,500
Total appropriation act, 1946			1,308,400
Anticipated supplemental for additional costs due to the Federal Employees Pay Act of 1945:			
Forest management		116,900	
Range investigations		42,100	+159,000
Total anticipated available, 1946			1,467,400
Budget estimate, 1947			1,706,000
Change for 1947:			
Overtime decreases	-17,819		
Increase	+256,419		+238,600

Note--As indicated above, the estimates propose the consolidation of the items "Forest management" and "Range investigations." This proposal is made in the interest of further simplifying the appropriation structure for research activities of the Forest Service and is designed to provide a more logical grouping of research funds.

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
1. Experimental forests and ranges	- -	$443,300	$695,555	$252,255(1)
2. Forest management	$406,975	476,664	478,015	+1,351(2)
3. Fire control	56,566	71,895	72,099	*204(2)
4. Watershed protection and management	74,400	83,596	84,768	+1,172(2)
5. Range management and reseeding	235,738	374,126	375,563	+1,437(2)
6. Overtime pay	102,811	17,819	- -	-17,819
Covered into Treasury as miscellaneous receipts, Public Law 529	220	- -	- -	- -
Unobligated balance	4,875	- -	- -	- -
Total available	881,585	1,467,400	1,706,000	+238,600
Anticipated supplemental	- -	-159,000	- -	
Total estimate or appropriation (1945 and 1946 adjusted for comparability)	881,585	1,308,400	1,706,000	

INCREASES OR DECREASES

The net increase of $238,600 in this item for 1947 consists of the $17,819 decrease for overtime, and the following:

(1) An increase of $252,255 under the project "Experimental forests and ranges," composed of:

(a) An increase of $250,419 to establish, equip, and staff experimental forests in the United States.

Objective: To further the establishment of a nation-wide series of experimental forest and range research centers to obtain, test and make readily available specific information needed to manage and use efficiently and permanently the timber, forage and water resources of forest and range lands throughout the Nation.

The Problem: Interest in better forest and range land management is developing rapidly as the possibilities become better understood and the essentiality of sound and conservative use of these great natural resources becomes more fully appreciated. A tremendous number of people are concerned, as contrary to common belief, that most forest and range ownerships are small. Some 4,000,000 farmers own commercial forest land and there are about 880,000 owners of commercial nonfarm forest land, the average holding being about 230 acres.

Although substantial areas are now being well managed, a much larger area particularly in the smaller ownerships is not well managed and only partially productive. Factual information required to grow and harvest timber crops, to reseed and productively utilize range lands, and to manage forest watersheds for the greatest yield of useable water is urgently needed for many forest and range types not now under study. Because of the frequently interlocking nature of timber, range and water problems, a joint attack is necessary.

Recognizing the essential unity of the problem and need for more regionalized research to answer these problems, the Congress provided for the fiscal year 1946 an initial increase for timber, range and water research built around a series of experimental forests principally in the South. It also requested that for the fiscal year 1947 there be presented a similar program on a national basis that would more fully meet the need for this kind of work.

This regional approach is required in view of the wide scope and diversity of forest and range conditions. Its soundness is attested by the success of such experimental forests and ranges as are now in operation. Experience at these experimental areas has shown that useful results can be obtained beginning almost at once and that they can serve their purposes as large-scale demonstrations almost immediately to landowners and operators within the general area they serve.

Significance:

Timber. Wood is one of the Nation's most essential, versatile and generally useful of renewable raw products. Not so well appreciated, however, is the fact that wood is a crop that has to be protected, grown and harvested if continuous production is to be had in abundance to satisfy national needs. Timber, particularly of the size and quality most needed, is not being grown as fast as it is being used. Future market estimates indicate a demand of over 20 billion cubic feet annually--about twice present growth. The bulk of the Nation's virgin timber is gone, its cutting unfortunately hastened by the war. The Nation now squarely faces the necessity of growing its timber. And it can be done; there is land and opportunity to do it cheaply and abundantly.

Timber growing as a business is a coming thing; it has come about mainly in the last 10 to 15 years. It offers an opportunity for a steady and dependable livelihood to many thousands of forest workers and owners. A productive yet permanent form of cropping, conserving, and building up the soil and adaptable to a wide range of soil and climatic conditions, timber growing is the best and in most cases only profitable use of commercial timber areas. Over vast areas, particularly in the South, it is a natural complement to other agricultural crop production. Polls of the postwar desires of men in the armed forces consistently show a widespread desire to get back on the land, to own some land, and to engage in individual enterprise. Tree growing provides great opportunities in this respect. Forest land values are relatively low and comparatively small investment in equipment is necessary to grow and harvest timber in most areas.

Successful timber growing as a means of livelihood for many thousands of mostly small owners requires, as does cultivated and other plans of agriculture, a large volume of information, much of which is of local application. To be useful this information must be in terms of specific recommendations for planting or seeding deforested areas and for thinning or otherwise improving the growth and quality or harvesting the products from existing forests. Many principles and facts apply in general to large forest areas but to be useful to a particular practitioner they must be interpreted and applied in terms of his problems and conditions. The experimental forests are operated to determine the most practicable local applications of these principles.

Range. A high proportion of the beef cattle and the sheep of the nation obtain much of each year's sustenance from grazing on range lands. Each year between 20 and 25 million animals which are grazed on range, go either direct to slaughter, or as stockers and feeders to farms in the Mid-West and other feeding areas for further finishing before slaughter. Range sheep provide most of the nation's wool. In addition, thousands of deer, elk, and other forms of wildlife use the ranges, often competing with cattle or sheep for the same forage. Management and use of range lands which assures sustained production of forage, rehabilitation of deteriorated ranges, and production at as reasonable a cost as possible is vital to the permanent welfare of the 3 billion dollar range livestock industry and the conservation of the range resource.

Many of the western ranges were seriously deteriorated some 40 or 50 years ago. Recovery has been slow because of inadequate knowledge of management practices and of reseeding possibilities. Inadequate forage production on range lands has prevented them from furnishing their full potentialities in meat, hides, and wool, so vital in the postwar period. Inadequate production and high cost often incident thereto has also impaired the welfare of individual farms and ranches and community well-being. Thousands of these are small outfits whose sole livelihood is range livestock production. Moreover, the lack of full vegetative cover has prevented these lands from giving the character of watershed protection or of maintaining the wildlife and recreational possibilities which they should.

Research, to date, has shown the way for more rapid recovery of certain range types and conditions and has also shown how, by improving range management, calf and lamb crops can be made greater, weights of calves and lambs increased and better quality animals produced for slaughter. Based on research results several million acres of range land in the Central and Northern Plains and on the better soil conditions of several Inter-mountain and Northwestern States have been reseeded successfully and at far less cost than was possible 10 years ago. Improvement of range conditions and livestock production works for the benefit of the nation at large as well as for those communities and regions immediately affected. Careful calculation of actual betterments widely used show livestock producers have benefited in savings and increased revenues by some $30,000,000 to $40,000,000 annually, as a result of these studies.

New research will be aimed specifically toward seeking sound range management and reseeding practices which will speed up recovery and assure better use of extensive public and private range lands not yet covered by research. The research, too, through the furnishing of more range forage, economically, will aim to lower unit livestock production cost and will also aim to reduce range reseeding costs.

Range recovery and improved management will mean that more meat and animal products will be made available to consumers, the thousnads of growers of range livestock will be placed in a better, more stable, social and economic condition, wildlife and domestic livestock using the same ranges will be in better balance with the forage supply, and the loss of soil and unfavorable watershed situations will be improved and corrected.

Watershed Management. Water is growing in importance in our national life. The increasing demand for irrigation water throughout the West, the growing interest in water-recreation, the increasing concern over the siltation of streams and reservoirs, the growing pressures for flood control works, and the growing shortages of water supplies (both surface and underground) for domestic and industrial uses: - all these not only accentuate the problems caused by an increasing population and greater demands for water, but also focus attention on the value and

place of the forest and range cover in relation to streamflow regulation and our national water resource. The management of our great area of nonagricultural lands, and the manner and character of the utilization of the natural forest and range products greatly affect both the quantity and quality of the water resource and how, when and where this resource can be used to maximum advantage or benefit.

The solution of our water and watershed problems is of direct public concern because of the large area of important watershed lands in Federal ownership. The earliest "forest reserves" were created primarily to prevent abuse of headwater lands. The Weeks Act of 1911 authorized public purchase of forest lands to protect public values in navigation. The Clark-McNary Act of 1924 authorized public acquisition of lands for watershed protection. Congress has passed a number of acts for land purchases for flood and erosion control. Additions to national forests have been made through transfers of public domain and by gift and exchange with watershed protection a main consideration. Congress has also authorized setting aside national forest lands for the protection of municipal supplies and for recreation where water is the dominant use.

The solution also is needed for other public forest and range lands although so far in their management little attention has been centered upon the water resource. Some State forests have been established to preserve local water resources especially where water recreation is important. Zoning has been considered to protect water supplies and to reduce flood damages. New Hampshire has forced numerous communities to obtain forested watersheds as a source of domestic water. Many communities, concerned as to the quality of their water supplies, are acquiring watershed lands.

The solution is needed because of the increasing attention being paid to irrigation development. Huge engineering structures have already been built and others are being considered. Some are to water new lands and others to provide supplemental water to lands now only inadequately served. As shortages develop and as qualities decrease, greater concern will be felt over the head-water areas - their character, condition, and use, and the possibility of preventing water losses. Already far-thinking engineers have expressed interest in these lands and concern over reservoir silting and on the high cost of maintaining canals constantly choked by sedimentation. The effectiveness of the various watershed measures and devices which have been advocated and used, however, has never been adequately proved. Uncertainty exists as to the actual performance of some practices and the value of others. Questions have been raised as to the validity of some of the claims as to the possibilities of maintaining or increasing the flow. Certainly there is room for improvement in both the application of the measures and in the measures themselves. Indeed, were more abundant information available, the effectiveness of both the management and treatment of forest and range lands could be increased and costs reduced.

So far, no great attention has been given to practices, methods of treatment, or uses of forest and range lands to provide maximum quantities of usable water. It is not wholly unconceivable that specific watershed programs will have to be developed for western water-source areas as a means of reducing water losses, of safeguarding public investments in irrigation development, of making possible the extension of life of irrigation works, and of preserving the civilization based upon them.

Plan of Work: The territory of the existing regional forest and range experiment stations ultimately will be zoned into a series of areas of perhaps 10 million acres each, each constituting distinctive conditions in terms of forest or other vegetative types, soils, and general land and water management problems. These areas will also be as nearly natural geographic and economic units as possible. Within each of these areas will be located one of more experimental areas representative of important conditions. Upon them intensive experiments in timber, forage, and water production and management will be conducted and new and better methods tested and demonstrated on a scale representative of the smaller holdings characteristic of most forest and range land ownership. These experimental areas will provide a place where farm foresters, engineers, extension specialists, forest and range land owners and all others concerned can come and see good forest, range and water management in operation and get accurate and specific information on how it is done.

Located at some convenient headquarters point, normally at or near one of these experimental forests or ranges, will be a small group of skilled research men with necessary assistants. These men will not only operate the experimental areas but conduct research elsewhere within the zone tributary to the work center as may be necessary to meet its research needs. The experimental forests and ranges are thus a distinctive and essential feature of the program but research effort is by no means limited to their boundaries. As used here the term experimental forest, watershed, or range includes not only work done on the specific forest, watershed, or range but supplemental research done elsewhere in the general zone as a whole.

The above plan will permit some progress in the development of a flexible and coordinated network of research units within the administrative framework of regional experiment stations. In conjunction with some region-wide specialists working out of the Station headquarters, this plan will make it possible to meet the local needs for practice measures and yet work collectively to solve the major problems of the region as a whole. Because of the wide and interlocking nature of the many problems to be solved which do not follow state lines, and the necessity for continuous and well organized effort, leadership by the Federal Government is necessary.

A number of experimental forests, watersheds, and ranges have already been established and a few partly developed. The proposed increase will provide for a few additional research areas and some strengthening

of urgent research at several others. It is expected that most new research areas can be set aside from lands already in Federal ownership or be obtained by lease or other suitable cooperative arrangement from other governmental or private agencies. Full use will be made of all available research facilities. The work will be done in close cooperation with all interested Federal, State and private agencies. Particularly in its more localized aspects, a large measure of cooperation with State Agricultural Experiment Stations and other local and regional groups is expected.

The specific program of research at each experimental forest, watershed, and range research center will naturally vary according to the nature and magnitude of the problems to be solved. Some will be concerned almost entirely with timber, others will be range research centers and others will be devoted entirely to water use problems. Whenever possible, two or more of these major lines of work will be conducted and correlated on a single experimental area.

The annual cost of operating an experimental forest or range research unit is variable depending on the fields of work involved. The work is of a highly technical nature and requires an extremely able program leader and a staff of skilled project workers plus necessary field technicians, clerical and other supporting personnel.

The increase would be expended by major work projects as follows:

Forest management	$124,419
Range management and reseeding	51,000
Watershed management and protection	75,000
	250,419

(b) An increase of $1,836 for placing on a full-year basis in 1947, within-grade salary advancements which are estimated to be in effect for only a part of the fiscal year 1946.

(2) Increases totaling $4,164 under Projects 2, 3, 4, and 5 for placing on a full-year basis in 1947, within-grade salary advancements which are estimated to be in effect for only a part of the fiscal year 1946.

CHANGE IN LANGUAGE

The estimates include proposed changes in the language of this item as follows (new language underscored, deleted matter enclosed with brackets):

> Forest and range management investigations: Fire, silvicultural, watershed, and other forest investigations and experiments under said section 2, as amended, and investigations and experiments to develop improved methods of management of forest and other ranges under section 7, at forest or range experiment stations or elsewhere,* *

The changes in this item are proposed in order to effect consolidation of the former "Forest management" and "Range investigations" appropriations under the proposed new title "Forest and range management investigations", and are necessary in order to incorporate in the paragraph references to work formerly included under the separate items "Forest management" and "Range investigations". The change in title is for the purpose of appropriately designating activities included under the combined item.

WORK UNDER THIS APPROPRIATION

Objective: To supply and interpret the facts needed to manage forest and range lands so as to produce the greatest values in merchantable wood and other forest products, in range forage, and in usable and controlled supplies of water. (Note.-- It includes work formerly reported separately under the appropriations "Forest management" and "Range investigations" which are proposed to be consolidated under the heading "Forest and Range Management Investigations" in the 1947 estimates.)

The Problem and Its Significance: The continued productivity of our forest area, about one-third the total area of the country, is of major concern to a large segment of the American people. Industries, communities, in fact whole local and regional economies are founded on the harvesting, manufacture, transportation, and merchandising of wood and wood products. Properly managed and rightly handled, these wood products can be produced not only on a continuing basis but their quantity and quality can also be materially increased. Improperly handled, our forest land cannot continue to meet national requirements.

The range lands of the West, South, and Southeast, both forested and untimbered, have furnished an important part of the forage which is carrying the greatest number of livestock in the history of our country. As a result of these large numbers of livestock, range deterioration has continued to increase. A three billion dollar industry is based upon these range lands and from them and correlated agricultural production come 80 percent of the nation's wool and mohair, three-fourths of the live weight of sheep and lambs, and more than half the live weight of cattle and calves. There is an ever increasing demand for beef, veal, lamb, and hides; thus it is essential that the range resources of the nation be improved and maintained in a highly productive condition. Better grazing management and reseeding of depleted areas are the keys to sustained high and profitable production of range livestock.

Forest and range lands are the source of much of our water supplying about 90 percent of the total available water resource in the West. Water from these watersheds supplies hundreds of communities with domestic water, furnishes many thousands of acres of agricultural land with irrigation water, turns the turbines of hundreds of hydro-electric plants, and provides recreation for many of our citizens. These areas when properly managed protect communities and agricultural lands from destructive floods and harmful sedimentation.

Much of the lack of progress in improving woods and range practices, in regenerating and protecting the forest and range on the nation's watersheds, and in safeguarding the water resource can be attributed to lack of adequate technical information on how to do the job. The tremendous complexity of American forest and range conditions creates such a variety of problems that only research on a national scale yet local in application, can provide the measures to cope with them.

General Plan of Work: Research under this appropriation is conducted through 12 regional forest and range experiment stations. Much of the actual work is conducted on experimental forests or ranges where conditions representative of those found over a considerable area, permit concentration on major problems. A wide variety of detailed studies are made of various forest and range practices and operations in their relation to growth and productivity of the land, to the difficulties of fire control, and to the yield and control of water. Water measurements are continually made on carefully selected drainage basins and the effect of changes in forest and range cover conditions determined. Continuity in work schedules and records is essential to the successful conduct of these investigations. Cooperation will be continued with the various State Agricultural Experiment Stations, the Agricultural Research Administration, and other Federal, State and private agencies.

Progress and Current Programs: During the war, research efforts were largely directed toward aiding immediate maximum production of timber, meat, hides, and wool on the nation's forests and ranges. Emphasis is now being shifted to the development of sound methods for proper use and conservation of our timber, range, and water resources, so vital in the post-war period. Many basic facts are already well known. A big job ahead is to test out thoroughly their practical and local application on a nation-wide system of experimental areas which will serve as pilot plants and demonstrations of the result of improved management practices.

1. Forest Management

a. Forestry as a business. At the few experimental forests now in operation, methods of forest management are being tested on a pilot plant scale. On the Blacks Mountain Experimental Forest in California, 9¼ million board feet of ponderosa pine logs were harvested last year in commercially profitable light cuts that removed the slowest-growing and least thrifty trees and left the more vigorous to increase in value. A portable truck loader designed and built at Blacks Mountain continued to perform satisfactorily. It has attracted wide interest, and details of its construction have been made available for the use of small logging operators to aid them in greater production of lumber.

Forestry as a community-sustaining business was demonstrated at the Dukes Experimental Forest in Michigan. Here the cutting of 2 million board feet of hardwood timber last year provided 4,800 man-days of work and an income of $32,000, to 51 out of the 70 able-bodied farmers who live near the forest. The income of 43 families was increased an average of $430 for the year. Without this part-time work, the men would have had to seek employment at a distance from home, to the disadvantage of themselves and the community.

A survey made by the Northeastern Forest Experiment Station in New York State showed that the more woodland owners know about good forestry practice, the more they favor it. The survey was made to sample the attitudes of landowners toward the Otsego Forest Products Cooperative Association,

an advocate of intensive forestry in a region where it is practicable. The results emphasize the need for strategically located demonstration areas where timberland owners can see for themselves that good forestry is good business. Accelerated cutting of timber for the war emphasized the necessity for developing cutting practices that will prevent destructive overcutting. To meet this need, guides for cutting specific forest types, expressed in simple language were prepared in small pamphlets, one for each of the six important forest types in the northeast. Widely distributed and in brisk demand, they have helped to prevent unnecessary destruction of forest values while permitting a good yield of war-essential timber. These same guides will be of equal value, as cutting for long delayed civilian use replaces harvest to meet war needs.

b. Timber production and reproduction. Results of numerous experiments, some of them started many years ago, are giving useful information on methods of growing and renewing timber stands. Remeasurement of old sample plots in the Southern Appalachians last year showed that reproduction of yellow-poplar and sweet birch is twice as abundant eight years after cutting on areas clear-cut as on areas with a residual stand of 5,000 board feet per acre, and that improvement cuttings removing as much as half the timber in run-down oak stands so stimulated growth of trees chosen to remain that in 13 years the original volume was regained. Analysis of growth of partially cut northern hardwood stands in the Northeast indicated that frequent light cuts bring the most valuable yield of timber in the long run. Cutting 25 percent of the volume every 10 years would provide $740 per acre in the 120 years, whereas clear-cutting at 60-year intervals would bring only $260 per acre during the same period.

Although little is yet known about the habits and requirements of Puerto Rican tree species, the Tropical Forest Experiment Station has devised a workable scheme for making improvement cuttings in the mixed forests of that island. The goal of the cuttings is to establish, and maintain, a stand of uniformly spaced trees to shade about 60 percent of the ground. This goal is approached by cutting in order, the following classes of trees: (a) dead trees, (b) overmature trees, (c) mature trees, (d) immature trees of poor form regardless of species, (e) immature trees of good form but of inferior species, and (f) immature trees of good species and form, the removal of which will improve spacing and favor growth and development of neighboring trees of at least equal value. About 1,000 acres on the Caribbean National Forest have been cut according to this scheme, the resulting income, $18 per acre, is nearly equal to the cost of all protection and management of the Forest.

The advantages of thinning young timber stands to increase their yield were brought out strikingly in studies of a commercial thinning in a 35-year-old jack pine stand in Wisconsin. A first thinning in 1940 cut 4.5 cords per acre from a stand of 22 cords per acre. The second thinning in 1944 removed another 4.5 cords per acre. Growth during the intervening period averaged 6.4 cords per acre. In contrast similar unthinned stands made a net growth of only 1.1 cords per acre in the same period, due to the loss of 5.7 cords per acre in death of overcrowded trees. General application of such thinning practices will greatly increase the domestic supply of pulpwood.

Similar results were obtained in young northern hardwood stands in the Northeast. In 1933, 16 cords of pulp and chemical wood were cut from 40-cord-per-acre stand, leaving the healthiest and most vigorous trees. Ten years later the stand had 42 cords per acre. Thinning had increased the proportion of the most vigorous trees from 63 to 80 percent, and of the trees of best bole form from 70 to 81 percent, and had resulted in a growth of 1.8 cords per acre per year. A nearby unthinned stand grew only one cord per acre per year during the same 10-year period, and much of this growth was on trees of poor form and low vigor. Analysis of data from thinning plots in the South showed that the best spacing for 4- to 9-inch longleaf pine trees is diameter plus seven. For example, if trees average 8 inches in diameter, they should stand 8 + 7 or, 15 feet apart.

In cooperation with the Bureau of Entomology and Plant Quarantine, the Northeastern Forest Experiment Station is working out methods of cutting to discourage attacks of the spruce budworm. The infestation, already serious in Canada, has recently broken out in New York and Vermont. Past studies have shown that most serious losses have occurred where there is an abundance of balsam fir, particularly where the trees are overmature. The Station is making surveys to locate susceptible areas where overmature balsam is abundant, and is conducting studies to determine the effectiveness and costs of concentrating cutting in such stands.

Over one-half the western hemlock trees left standing in a partial cutting in the Pacific Northwest were injured during the logging. Rot was found in all injured trees 12 years later, decay having spread as wide as 12 inches and as high as 8 feet in some trees. Results of this preliminary study indicate that logging injury is a limiting factor in partial cuttings in hemlock. Rules for estimating the amount of rot in standing lodgepole pine, Engelmann spruce, and alpine fir trees were worked out at the Rocky Mountain Forest Experiment Station.

At the Crossett Experimental Forest in Arkansas it was found that success in loblolly pine reproduction depends on how large openings are cut in the forest. The height of 3-year-old seedlings averaged 2.1 feet in openings 1/10 acre and larger, but only 0.5 foot in almost complete shade. Of all the seedlings that had started 69 percent were alive in the openings, but only 27 percent in the shade. In the Southwest it was found that shade and a mulch of litter protect Douglas-fir seedlings from winter killing, but root competition from mature trees retards their growth. Experiments in the Ozarks showed that under natural conditions of overstory and seedbed, only 2.7 percent of shortleaf pine seeds that fall to the ground produce seedlings that live for as much as 5 years. Neither light burning nor light soil scarification increase this percentage. Heavy cultivation of the soil did help, raising the percentage to 6, but is too expensive to be practicable. Reduction of the overstory not only increased survival but increased the height growth of seedlings by 7 times.

The harvesting of sword fern in the Pacific Coast forests has developed into a million-dollar-a-year business, and in some places the species is threatened with extinction. Studies by the Pacific Northwest Station,

undertaken in an effort to perpetuate the business, showed that up to 25 percent of the number of fronds on a plant could be removed each year without harm.

c. Planting research. Although extensive studies at the California Station proved that seed size of pine is not genetically related to inherent vigor of trees grown from them, they show that the largest seedlings and transplants in nursery beds grow into the best trees when planted out. In nursery practice discarding the smallest one-third of the seedlings and the smallest one-sixth of the transplants will improve plantation success and reduce over-all costs.

Direct seeding as a substitute for planting is being studied at a number of the experiment stations. In the Ozarks the survival and growth rate of shortleaf pine seedlings obtained by direct seeding in the fall followed by complete release by girdling competing worthless trees was so good that the method has been adopted on a trial basis on the Mark Twain National Forest. In the Northern Rocky Mountain region studies indicate that on favorable sites and by proper treatment of the seed to protect it against rodents, direct seeding can produce a stand of young trees more cheaply than planting. At the Appalachian Station, preliminary results showed that direct seeding costs can be reduced one-half or more by using suitable machines. Machine drilling in shallow plowed furrows, and covering with a light mulch gave good results at low cost.

The spoil banks thrown up in strip mining operations in the Central States and Pennsylvania present puzzling problems in land use and conservation. How can they be restored to usefulness, and their ugliness eliminated? Preliminary studies show that planting to forest trees is possible but that new techniques must be developed to make planting generally successful.

At the Southern Station yields of 12-year-old plantations of slash and loblolly pine spaced from 4x4 to 16x16 feet showed that yield varied directly with spacing, being 35.6 and 25.4 cords per acre for slash and loblolly for 4x4 spacing and only 8.1 and 10.4 cords per acre for 16x16 spacing. The insurance value of mixed plantings was demonstrated at the same station when a 2-year-old plantation of slash and longleaf pine was burned over. Ninety-seven percent of the longleaf survived but only 17 percent of the slash pine lived. On the other hand, in a similar plantation where hogs were allowed to run, they destroyed all the longleaf trees, but enough slash pine were left to produce a good stand.

Results of years of experience in seed collection, nursery practice, field planting, and plantation care were brought together in a 150-page mimeograph report "Forest Planting in the Douglas-fir Region", issued in 1944, by the Pacific Northwest Station and Region.

At the Tropical Station in Puerto Rico studies of seed, nursery, and planting problems were continued with native species. The task is a long one because there are so many kinds of trees and so little is known about them. Work is being concentrated at first on species that appear to be of importance in forestry because of (1) rapid growth,

(2) large size and good form at maturity, and (3) aggressiveness on poor sites. Puerto Rico is so densely populated that agriculture occupies all but the very poorest and steepest lands, and there is a demand for every stick of wood that can be produced.

d. Tree Genetics. Tree breeding work has been continued on a limited scale. At the California Station a hybrid between eastern and western white pines showed almost double the growth of either parent, and seemed to be a promising candidate for forest planting. A jack pine-lodgepole pine hybrid continued to exceed either parent in growth. It has the erect form of lodgepole and there is reason to believe it will be cold hardy when tried out in the natural range of jack pine. Results of pollination tests indicated that mass production of hybrid seed is possible at a relatively low cost.

At the Northeastern Station elite-quality white birches that "work-up" well in wood-turning factories will be sought among 1000 white birch-grey birch hybrids now ready for planting out. Inherent differences in the "sweetness" of sap from different sugar maples have been discovered. Sugar content of some trees is 3 times as great as others. Selection and propagation of such trees could be of great benefit to the $5,000,000-a-year sugar maple industry.

e. Naval Stores. Experiments since 1937 at Lake City, Florida, have demonstrated the efficiency of chemicals, particularly sulphuric acid, in stimulating gum production from naval stores timber. During the past year specific recommendations on how to use acid in stimulating gum production were made available to gum farmers in "Information on the Use of Chemical Stimulants to Increase Gum Yield". Three methods were recommended instead of one because of variations in labor and other conditions in the naval stores industry. They are: (1) bark chipping with weekly acid treatment; (2) "skip" acid treatment; and (3) periodic acid treatment. Bark chipping consists of removing the bark to but not beyond the surface of the wood, a radically new practice developed in 1943. Combined with acid, this method results in greater yields than are obtained by applying acid to regular chipping 1/2 inch deep in the wood. The "skip" acid treatment consists of chipping weekly but applying acid only every other week. Periodic acid treatment is defined as chipping and acid application at weekly, biweekly, or longer intervals, depending on the labor facilities of the operator. Because of the long period of gum flow from treated streaks, this method has much to recommend it under the tight labor conditions common in certain sections of the navals stores region. Depending on the intensity of the acid treatment, production can be increased from 20 to as much as 90 percent. To date there are no indications that acid applied according to recommendations has any deleterious effects. However, studies are now underway of the long-time effect of chemical stimulants on health and vigor of the trees.

2. Fire Control

In southern California a method is being sought for appraising damage done by fire to watersheds covered with chaparral. Erosion following fire on these hillsides often causes great losses because of silt

deposits on orange groves and municipal properties below them. Furthermore, muddy water from such hillsides will not infiltrate properly to the underground reservoirs on which the cities and irrigation projects depend for their water supply. Last year's work indicated that any method for appraising damage must consider the hydrologic and erosion characteristics of individual drainage units and the values that are susceptible to damage when the watersheds burn over.

The increasing use of fire danger ratings by State, Federal, and private fire protection agencies has made urgent the improvement and refinement of the methods of measuring fire danger. A new fire danger meter developed at the Northern Rocky Mountain Station, put into use during 1944, has proved to be highly successful in giving a more accurate appraisal of current fire danger. Throughout the country the forest experiment stations are leaders in the techniques of fire danger appraisal, and during the past year assistance and advice were given to all forest fire control agencies.

Large areas of logging debris, or of brush and rank grass, will burn furiously and do great damage if accidentally set afire during dry windy weather. The debris may also hinder the growth of tree seedlings. Therefore, it is often advisable to burn over such areas intentionally at times when the fire can be controlled. Proper methods to be used in controlled burning are being studied at several of the experiment stations. Observations on burning logging slash in the Pacific Northwest indicated that fires could be easily set and controlled over wide ranges of relative humidity of the air and of fuel moisture conditions, provided the wind was very light and the duff on the ground was moist beneath the surface.

A thorough study of the need and possibilities of fuel reduction made by the Northern Rocky Mountain Station suggests that if savings in future fire control costs alone are considered, only a small amount of fuel reduction can be justified even in the worst fuel types. If, however, increased productivity of the land is considered in addition, then fuel reduction can be justified in many medium and high-hazard fuel types. In Florida, extensive experiments in prescribed burning were undertaken when 39,000 acres on the Osceola National Forest where heavy brush and debris had accumulated, were treated with fire to reduce hazard and lessen fire suppression costs. Findings indicated that with experience this fire treatment can be accomplished at a cost of 5 cents per acre, with damage per acre to young trees amounting to only 15 cents per acre.

3. Watershed Management.

Research in Watershed Management and Protection continued on a maintenance basis during fiscal year 1945 at all 5 of the regional forest experiment stations where such work was in progress. Data analyzed during the year continue to show that water yield from high mountain lodgepole pine forests can be increased by careful cutting practices, and that some cutting on municipal watersheds is possible without impairment of the quantity or quality of water.

The experts in the stations have, however, contributed materially to the advancement of good watershed conditions. They have been consulted by the water users on irrigation projects as to the effects of watershed uses, by municipal water engineers as to effects of cutting or grazing on domestic supplies, by engineers of the Reclamation Service and Army Engineer Corps as to waterflow in its relation to conditions of a watershed, and by others interested in quality of water and desirable run-off conditions. They have been of special service to the flood control programs of the Department in supplying information on run-off and sedimentation conditions. Some of the devices, notably the San Dimas flume and the infiltrometer, have been used by a number of agencies. The San Dimas flume developed in southern California has proven itself suited to the measuring of sewage discharges of large cities. The infiltrometer has been used to test the packaging of Army goods for transit overseas and for testing clothing and other apparel for use by troops exposed to rains of different characteristics.

It is proposed this year (F.Y. 1946) to continue the work along the lines previously followed, and with the larger appropriation made available for the work, again to measure the flow of a number of the small watersheds, records of which were discontinued at the outbreak of the war. The 1946 year will not only see the resumption of this work, but an effort to catch up on the accumulated data of the past few years.

4. Range Management and Reseeding Investigations

Research under this project seeks to discover and develop in practical, usable form, improved range management and restoration practices for nearly 900 million acres of public and private range lands in the West, South, and Southeast. Forage produced on this vast area provides a large and essential part of that required by the millions of head of range cattle, sheep and goats, a 3 billion dollar industry. The range territory--range lands and integrated agricultural production--produces more than half of the live weight of the nation's cattle and calves, three-fourths of the live weight of the sheep and lambs, 80% of the nation's wool and mohair, and a high proportion of the hides, leather and other livestock products. Full forage production on range lands and better use of this forage are urgently needed to attain the high production of meat, hides, wool, and other livestock products required for peacetime economy and prosperity.

Ranchers and farmers made considerable use during the war period of range research results in producing a maximum of livestock and their products from range lands. Live weight production of cattle and calves, for example, during the three war years of 1942-44, in the eleven Western States averaged 3,238 million pounds in contrast to 2,869 million pounds during the years 1917-18 of the last war, and 2,175 million for the reasonably prosperous five years, 1925-29. Also, sheep and lamb production in these States in 1942-44 averaged 901 million pounds in contrast to 623 million pounds during 1917-18, and 892 million during 1925-29.

The Forest Service has primary Federal responsibility for conducting range studies and for developing sound practices for both public and private range lands. During the war the research was streamlined; some long-time investigations were concluded or put on a maintenance basis. Emphasis was placed upon studies of immediate value in meeting wartime production needs, in providing direct assistance to the War Food Administration, the armed services, and other governmental agencies, and on making all results fully available for immediate application by range administrators and livestock producers. During the fiscal year 1946 special emphasis is being given to aspects of the work important in the immediate postwar period.

Examples of Accomplishments include:

(1) Grazing Management Investigations

(a) Research in many parts of the West has shown the way for more rapid recovery of certain deteriorated range types and conditions and how, by improved range management practices, livestock production can be increased and better quality slaughter animals produced. At the Desert Experimental Range in the Intermountain region, for example, on ranges experimentally grazed during winter by two herds of sheep, moderate stocking and other good management over a period of 8 years has resulted in $2\frac{1}{2}$ to 3 times as much forage produced as resulted from heavy stocking and other inadequate management. Species which provide the highest quality forage, produced more than 5 times as much. Greater protection was also afforded to soils and other watershed values. Sheep grazed on the moderately stocked and otherwise well-managed range produced fully a pound more wool per head annually and had average body weights which were 12 to 20 pounds heavier than those grazed on heavily stocked range managed in the usual manner. Death losses of sheep from malnutrition were practically eliminated from the well-managed range, whereas 3 to 5 percent losses were experienced year after year on the other range. Lamb crops 8 to 12 percent higher resulted. Financial returns were $1 to $1.50 more per ewe.

(b) Additional evidence of the inadvisability of heavy stocking of ranges by cattle was accumulated on experimental ranges in Colorado. On the Central Plains Experimental Range, cooperative studies show that cattle grazing on Plains ranges stocked at the rate of 40 head per section gained 319 pounds on the average during the six months 1944 summer grazing season. In contrast to this, cattle grazing on adjacent ranges stocked at the rate of 60 head per section, comparable to stocking of many ranges in the Central Plains, gained only 204 pounds per head in 1944. Not only was damage done to the range by heavy stocking but cattle gains cost more.

(c) Additional methods for converting sagebrush infested range lands to grasslands to increase grazing capacity and facilitate range livestock management have been developed. Some 50 to 60 million acres of spring-fall range from southern Montana and Wyoming to Oregon

and south to Colorado and Nevada are covered with dense stands of sagebrush and are producing very little palatable forage. Controlled fire has proved successful in the elimination of sagebrush and in increasing grass forage on rather level lands which do not have a high erosion hazard and which have a stand of perennial grasses. This method has been extended from an experimental basis to practical field application. There are some areas where because of high timber values or the threat of erosion, burning is inadvisable and conversion is best accomplished by other methods. Railing, harrowing with a self-clearing harrow, or breaking down with road rippers or spiked rollers, kills a high proportion of the sagebrush and permits natural recovery of the native perennial grasses. Plowing with a heavy disc, or Wheatland plow, has proven best on lands that are not too rocky or rough. This method cuts and tears the roots of sagebrush and provides an 80-95 percent kill of old established sagebrush plants. Since Wheatland plowing also kills most of the palatable perennial grasses it must be followed by reseeding.

(d) Range research played an important role in guiding development during the war of more efficient cattle production on Coastal Plain forest ranges in the South and Southeast, even though this work was started only two years ago in Louisiana and five years ago in Georgia and North Carolina. Most of the 7½ million cattle in the southern Coastal Plain, from North Carolina to east Texas, depend upon the cheap native forage for an essential part of their year round forage and feed requirements. Cattle numbers have increased 20% during the last five years but meat production per range animal is relatively low. Better management, however, offers considerable opportunity for increasing production at relatively low cost, thereby aiding the rural population. The cooperative studies have brought a better understanding of the forage values of most of the important native range plants, identification and recognition of the seriousness of poisonous plants, and the value of certain minerals and cottonseed meal as supplements to native forage.

(e) Help was given in formulating the 1945 and 1946 State and National production and marketing goals for feed, livestock, wool, and hides, in revising the long-time postwar production benchmark, especially for livestock, range forage, feed, and other related crops, and in continued efforts to guide range livestock production so as to keep a satisfactory balance between numbers of livestock on the range and year-long forage and feed supplies in order to assure maximum production.

(2) Range Reseeding Investigations

This project seeks to devise methods for economically increasing forage production through artificial reseeding on ranges that have been too seriously depleted to be improved within a reasonable period by proper grazing management practices alone. Results of reseeding research to date are now making it possible for range owners and range administrators to proceed with an action program for reseeding many depleted areas with

reasonable assurance of success. As a result of an appropriation increase for the fiscal year 1946, the Forest Service is extending its range reseeding investigations to all six Western regions and to the South and Southeast. Field conferences have been held with the Bureau of Plant Industry, Soils, and Agricultural Engineering, the State Agricultural Experiment Stations, and other agencies interested in cooperation, to formulate the most efficient program for developing sound results quickly.

Accomplishments include:

(a) The material values accruing from the extensive seedings which have been established in recent years as a result of range research recommendations are becoming more and more apparent. The reseeding of nearly 300,000 acres of spring-fall range in the Intermountain Region in the last three years, based on research results, now provides forage for grazing more than 100,000 cattle, or an equivalent number of sheep, for about two months in the critical spring period, where only one-tenth this number could be grazed satisfactorily previously. The better lambing ranges which these reseeded areas provide, are giving greater lamb crops and reducing ewe losses. The 1,250,000 acres of range reseeded in Montana during the past decade have a grazing capacity at least 10 times greater and can carry from 60,000 to 80,000 more cattle than before seeding. This increased forage has added nearly $500,000 in income annually to the stockmen of the State. The past 10 years of research which has made this Montana reseeding possible cost only $6,000 or $8,000 a year.

(b) In Utah, 2700 acres of depleted range land, seeded to provide a series of cooperative pastures for study of management of reseeded range, offers to overcome the serious overgrazing and inadequate production from cattle of about 30 local stockmen grazing on the adjacent national forest, grazing district and land use project. Spring and fall range forage is critically limited and forms the bottleneck in yearlong maintenance of their herds. During 1944, 1100 acres of the reseeded range furnished approximately two months forage for 200 head of cattle in the spring and a similar amount in the fall. The grazing capacity of these reseeded ranges is 1 1/3 acres per cow per month as compared to 15 or 20 acres of unseeded range. During the 70-day spring grazing period, cattle on this reseeded range gained 138 pounds, almost twice as much as those grazing on unseeded range. The entire experimental range, now available for grazing will provide forage for 600 cattle, spring and fall, more than one-half the total cattle in the vicinity.

(c) Reseeding of areas from which sagebrush has been removed is often necessary to assure a good stand of perennial grasses. Wide-scale experiments have shown total costs of sagebrush removal by Wheatland plowing and reseeding, range from $3 to $5 per acre. Burning and reseeding can be accomplished for $1.50 to $2.00 per acre. However, reseeding of such areas increases the grazing capacity by 5 to 20 times and raises the value of these lands from less than $1 per acre to $10 to $12.

(f) Range Investigations

Appropriation Act, 1946	$337,500
Proposed consolidation of this item in the 1947 estimates with "Forest management"	-337,500
Budget estimate, 1947	- -

Note.--Accordingly, the language for "Range investigations" is proposed for deletion in the estimates as a separate paragraph, but has been incorporated in the language for the consolidated item "Forest and range management investigations.

(g) Forest Products

Appropriation Act, 1946		$1,228,900
Anticipated supplemental for additional costs due to the Federal Employees Pay Act of 1945		+175,000
Total anticipated available, 1946		1,403,900
Budget estimate, 1947		1,385,000
Change for 1947:		
Overtime decrease	-23,914	
Increase	+5,014	-18,900

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
1. Conditioning and protection of wood products	$265,108	$401,428	$402,910	+$1,482 (1)
2. Properties, investigations and wood products development	482,479	589,125	591,215	+2,090 (2)
3. Pulp and paper	118,722	162,817	163,420	+603 (3)
4. Chemically converted and derived products	133,850	226,616	227,455	+839 (4)
5. Overtime pay	143,700	23,914	- -	-23,914
Covered into Treasury as miscellaneous receipts, Public Law 529	550	- -	- -	- -
Unobligated balance	3,110	- -	- -	- -
Total available	1,147,519	1,403,900	1,385,000	-18,900
Anticipated supplemental	- -	-175,000	- -	
Total estimate or appropriation	1,147,519	1,228,900	1,385,000	

INCREASES OR DECREASES

The net decrease of $18,900 in this item for 1947 consists of the $23,914 decrease for overtime and increases totaling $5,014 for the projects as shown above, for placing on a full year basis in 1947, within-grade salary advancements which are estimated to be in effect for only a part of the fiscal year 1946.

WORK UNDER THIS APPROPRIATION

Objective: To further increase the value and usefulness of forest products by providing the technical services and research needed for the conversion, protection, conditioning and development of wood products.

The Problem and its Significance: This year will be one of transition from an all-war program to a program of peacetime activities, and research and technological development necessary to meet peacetime needs will replace that required to meet the demands of war. This will be largely a change in emphasis rather than a change in the basic research program. It is important to note that much of the information obtained in the war research program will have direct application to peacetime uses of wood products.

With a housing boom expected in the years immediately ahead, improvements are needed in the design and construction details for conventional types of houses, in prefabrication design and techniques for use of both plywood and wood, and in joints and fastenings if the acceptability of wood for the construction of farm and urban homes and small buildings is to be maintained and expanded. New knowledge is also needed on the use of plywood, laminated wood, and solid wood for engineering structures of all kinds.

The tremendous woods and mill waste which accompanies the production of forest products must be reduced and methods developed for profitably utilizing unavoidable wastes. Chemical conversion provides one of the best apparent means of utilizing waste wood and research in this field must be continued. Mechanical conversion methods for using waste wood also need investigation.

Many species, because their form, size, and properties are not so desirable for conventional uses as those of preferred species, or because changes are needed in conversion, seasoning or protection methods to produce acceptable products have little or no market today. Technological developments are needed to bring more of the neglected species into use for conventional and specialty purposes. This will permit utilizing a higher percentage of the forest crop and contribute substantially to good forest management.

The demand for lumber continues high and improvements are needed in timber harvesting and in the operation of small mills to speed up production. Paper is also in short supply and work is needed to increase the yields and quality of pulp by improving pulping methods, expand the species base and increase the utilization of wood waste.

New or improved wood distillation methods are needed if this industry is to be kept operating at a high level and continue to provide jobs to those dependent upon it and afford a continuing large outlet for low grade hardwoods that now have no other use.

Many new technological developments in wood utilization were compressed into a short time interval by the war. These advances, which are very large in their potential significance, were directed almost entirely toward the creation of the tools and goods of war. They must now be directed as quickly as possible toward the tools and goods of peace.

General Plan: About 85 percent of the research and technical work is being conducted by the Forest Products Laboratory, Madison, Wisconsin, and the remainder is being done by the seven forest experiment stations having forest utilization units.

Examples of Progress and Current Program:

Conditioning and protection of wood products: The current program includes studies on wood finishing including water repellents; protection of wood products and structures from fire, decay, insects, and marine borers; glues and gluing techniques including laminated construction; kiln drying and chemical seasoning of wood; moisture content of wood in use; and wood bending.

A Wood Ship and Boat Fabrication Manual was prepared for the Bureau of Ships, Navy Department, which covers the proper use of wood in the construction of various types of wood vessels including deck boats, amphibious craft, torpedo boats, minesweepers, and heavy tugs. The manual, "Repair of Wood Aircraft Structures," was revised at the request of the Air Technical Service Command to include the results of recent Laboratory research. A manual on the maintenance and repair of wood and compreg propellers and wood test clubs was prepared for the Army and Navy air forces.

A restricted report was prepared in cooperation with the War Production Board and the Bureau of Ships, which contains the results to date of strength and exposure tests to determine the suitability of various low-temperature phenol, melamine, and resorcinol resin glues for laminating timbers for boat, ship, and outdoor use. Close collaboration with two cooperating pilot plants and other manufacturers has permitted prompt application of Laboratory findings. A report was submitted to the armed services covering experiments with 46 adhesives for bonding wood to metal, of which 15 were found to give high joint strengths with both steel and aluminum.

Results of fire-tube tests made on Douglas-fir and Sitka spruce specimens of various moisture contents were reported to the British Air Ministry - National Defense Research Council - Chemical Warfare Service group, which has been especially interested in the effect of moisture content of wood on its resistance to burning from military incendiaries. Fire tests conducted in cooperation with a commercial company showed that the use of a blanket-type insulation produced a slight increase in the fire resistance of frame wall construction, and that the hazard of this type of insulation in permitting the spread of fire could be altered by suitable chemical treatment of the wadding and cover papers.

A publication "Rate of Temperature change in Short-Length Round Timbers" was prepared which has particular application in connection with the heating of bolts or blocks for veneer cutting. To facilitate the repair of gliders urgently needed in Europe, Laboratory representatives visited three repair facilities and two glider training stations and made recommendations to the Air Technical Service Command on glider storage,

inspections for repair, and repair practices. The Laboratory worked with the Army Air Forces in the selection of a suitable preservative and in determining the most practical methods of application for gliders to be used in the tropics.

A manual of instructions was prepared for the benefit of military personnel who handle the certification of kilns for drying aircraft lumber. Because of a shortage of seasoned "white" willow for artificial limbs, seasoning studies were begun to reduce the drying time of solid banks of this species and in an effort to further augment the supply of material, tests were started to determine the suitability of black willow from the Mississippi Valley for artificial limbs. Tests on the effectiveness of urea-formaldehyde pastes and other materials in controlling surface checking during air seasoning of northern white oak planks for ship construction were completed.

Properties investigations and wood products development: Work now under way includes studies on the strength properties of wood and fibre-base materials; improving building construction, including houses, barns, and auxiliary farm buildings; improving wood shipping containers; increasing the efficiency of small sawmills and their operation; improving methods of harvesting the forest crop; and determining the relationship between growth conditions and wood quality and between wood structure and its properties.

Newly developed sandwich constructions having high-strength faces and low-density cores show great promise for modern high-speed airplanes including jet propelled planes. Research is being concentrated on determining the strength, elastic, and other properties of these materials and constructions. The results of several phases of the Laboratory's research for the Army and Navy to improve wood aircraft were presented in three reports as follows: "Effect of Thickness of Plywood Reinforcing Plates on the Behavior of Solid Wood Aircraft Spars under Changes in Moisture Content", "Effects of Variation in Design on the Strength of Some Typical Glued Fastenings in Wood Aircraft", and "The Influence of Moisture Changes in Wood on the Shearing Strength of Glued Joint Assemblies".

The properties of compreg used as reinforcing for bolted fastenings was investigated and a complete report on one phase of this study was presented in "Bolt Bearing Strength of Wood and Modified Wood - Bolt-bearing Strength of Laboratory-made Cross-banded Yellow Birch Compreg under Aircraft Bolts". At the request of the Navy Bureau of Aeronautics the Laboratory established methods of testing aircraft cargo flooring and obtained data on the behavior of several of the types of flooring now in use.

The damage done to wood buildings by a tornado that struck southwestern Wisconsin and northern Illinois last year was studied and a report prepared which presents observations on construction details which are and are not easily susceptible to wind damage. Because delamination was being experienced in the laminated arches at U. S. Naval Training Station, Great Lakes, Illinois, the Laboratory examined them, determined the causes of the difficulty and recommended rehabilitation measures.

Work on solving the packaging and container problems for Army Ordnance and Army Air Forces equipment and supplies continued at a high rate. Considerable work was also done on the packaging of lend-lease food. The Laboratory's free-fall container design selected for final development for use in aerial delivery of supplies was tested with satisfactory results at Wright Field. To correlate Laboratory tests with actual performance of packs and packing materials under tropical and simitropical conditions, an exposure station was established and a comprehensive series of tests begun at Barro Colorado Island, Panama, for the Army Air Forces.

Field work was carried out in Wisconsin, southern Minnesota, and northern Iowa to determine possible markets and outlets for Lake States aspen, white birch, and associated species when either pre-cut or pre-fabricated into brooder houses, hog houses, and other small farm structures. An analysis and report were completed dealing with the possibilities of establishing a new wood-processing plant to utilize aspen, white birch, and associated species in northeastern Minnesota. A list of references to publications on woods of the world by global regions was prepared for use in answering increasingly more inquiries about foreign species. A survey was made of the wood-turning industry in Maine to determine the problems of the industry and what could be done about solving them.

Four leaflets on small sawmills were prepared on the following: (1) details of western methods of package-piling lumber from the green chain so that it can be trucked without rehandling, (2) instructions on learning essential hardwood grade specifications as a sawyer-edger-man-trimmer guide in cutting for hardwood grades, (3) technique of cutting hardwood grades, and (4) two methods of using power from the truck to load logs or bolts. More than 60 specialized reports relating to the protection, properties, fabrication and use of wood products in war commodities were prepared and distributed in mimeographed form to designers, inspectors and manufacturers.

Pulp and paper: Studies are continuing on improving pulp yield and quality, developing and improving pulp and paper products including those containing lignin and resin, and broadening the species base and utilizing wood waste for pulp and paper.

Semichemical pulps were made from overcup oak, a little-used species found in the South, which when converted into 9-point corrugating boards were found to be equal or superior to commercial chestnut chip semichemical boards. The information obtained thus far, in a survey of the southern pulp and paper mills with regard to the utilization of low-grade hardwood, indicated that the best opportunities for the future use of low-grade hardwoods appear to be in the manufacture of insulating board, building papers, book and printing papers, and tissues, and specialties not now manufactured extensively in the South.

A sulfate pulping and bleaching study of Douglas-fir, Western hemlock, Pacific silver fir, Western redcedar, and several mixtures of these woods including sawmill waste was carried out in cooperation with a

western concern to provide technical and economic information for the operation of a proposed mill. Tests were made in cooperation with a West Coast logging and sawmill company on Western hemlock slabwood and other forms of waste for the purpose of producing insulating and hard board.

It was demonstrated that a good book-type paper can be made from an all-aspen pulp furnish of 50 percent groundwood and 50 percent bleached semichemical pulps which appears to be a satisfactory substitute for a commercial book paper composed of 60 percent aspen ground-wood and 40 percent bleached softwood sulfite pulps.

Some work was done on the use of paper plastic coverings for veneer or plywood for the purpose of producing a scuff-resistant, moisture and moisture vapor barrier that would eliminate the need for painting and for a covering material that could be used to upgrade inferior plywood. A promising core material for sandwich construction for aircraft and other uses was made from resin-treated corrugated paper and equipment was designed and built for resin impregnation of the corrugated paper and assembly of the treated paper for core fabrication.

Chemically converted and derived products: The current program includes studies on wood saccharification and the development of useful products from lignin residue; wood waste utilization by chemical conversion, destructive distillation of wood and lignin; improvement and adaptation of new uses of modified woods including impreg, compreg, and staypak; and the development of new wood preserving treatments.

A study to determine under what manufacturing conditions washboarding and thermal checking occur in compreg and how to specify material that is practically free from these defects was completed for the Army Air Forces.

Seven papers dealing with various phases of the work on the production of ethyl alcohol from wood were prepared and presented before the American Chemical Society. A satisfactory hardboard was developed from acid-hydrolyzed wood, and in the integration of hardboard production with wood-sugar production it was found that when Douglas-fir was hydrolyzed sufficiently to produce 20 gallons of alcohol per ton of wood, a good board could be made from the unhydrolyzed portion.

Studies to determine substitutes to supplement the diminishing supply of Port Orford white-cedar, the preferred species for battery separators, disclosed that Douglas-fir, noble fir, and Alaska yellow-cedar were satisfactory substitutes. Fibrous wood products having high acid-absorbent properties were prepared for a commercial manufacturer of chargeable flashlight batteries and they proved satisfactory in the company's tests which have run through 125 cycles of recharging. Nine test materials involving the development of chemical treatment of papers were furnished the United States Public Health Service for the detection of undecomposed sulfa drugs in the body fluids.

An investigation was completed for the evaluation of loblolly pine bolt and unbarked slab wood as potential commercial distillation material and a similar study was conducted on longleaf pine stump wood for comparative purposes.

A crude undistilled water-gas tar recently tested came close to passing all tests for coal-tar creosote and further tests are now underway to obtain an accurate evaluation of water-gas tars as wood preservatives. A simple method was devised to show the percentage of creosote in creosote-petroleum solutions such as are widely used in the preservative treatment of railroad cross ties.

Miscellaneous: There were established in 1945 two forest utilization units, one at the Northeastern Station and the other at the Southern Station, each consisting of a small corps of technical experts in forest products utilization with headquarters in the region of operation. These men, working in close cooperation with the Forest Products Laboratory bring the findings of that institution to industry, assist in commercial application of new discoveries, study local problems, transmit problems to the Laboratory, promote improved forest utilization locally. The accomplishments of the two units have been noteworthy and five additional units were established in 1946.

(h) Forest Resources Investigations

Appropriation Act, 1946		$204,600
Anticipated supplemental for additional costs due to the Federal Employees Pay Act of 1945.		+24,000
Total anticipated available, 1946		228,600
Budget estimate, 1947.		1,072,000
Change for 1947:		
Overtime decrease	-3,149	
Increase.	+846,549.	+843,400

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
1. Forest survey	$145,802	$153,451	$1,000,000	+$846,549(1)
2. Economic investigations	77,923	72,000	72,000	- - -
3. Overtime pay.....	27,024	3,149	- - -	-3,149
Covered into Treasury as miscellaneous receipts, Public Law 529	150	- - -	- - -	- - -
Unobligated balance.....	6,065	- - -	- - -	- - -
Total available.....	256,964	228,600	1,072,000	+843,400
Received by transfer from: "Salaries and expenses, Forest Service," national forest protection and management.....	-16,700	- - -	- - -	
Anticipated supplemental	- - -	-24,000	- - -	
Total estimate or appropriation (1945 adjusted for comparability)	240,264	204,600	1,072,000	

INCREASES OR DECREASES

The net increase of $843,400 in this item for 1947 consists of the $3,149 decrease for overtime, and the following:

(1) A net increase of $846,549 under the project "Forest survey" composed of:

(a) An increase of $845,640 to begin extending the National Survey of Forest Resources to regions not yet covered and to help keep survey information current in forest regions initially inventoried:

Objective: To provide at an accelerated rate to meet present and future needs, up-to-date information on forest resources of the United States, including timber supply, quality and location, forest land area and condition, and rate of timber growth and drain, and to determine present and prospective requirements for forest products.

The Problem: At present, the domestic demands for timber and other forest products are constituting a heavy drain on our forest resources. Added to this may be an additional drain if the requirements of other countries are supplied, in part, by the United States. Only fragmentary data are available on U.S. timber supply, condition and growth, and on forest land areas. Such information about this basic natural resource is essential in considering problems of supplying domestic and foreign demands and of maintaining forest productivity at a level to meet requirements of the future.

Significance: Domestic requirements for many forest products such as lumber, plywood, poles, pulpwood, are expected to exceed materially our pre-war rate of consumption. The need for lumber alone is expected to reach 39 billion board feet annually during the height of the post-war construction period, as compared to an annual average consumption of 31.6 billion board feet during the three years preceding the war, and a maximum production during the war of 36.3 billion feet.

Other countries, especially those which have suffered heavy war damage, need large quantities of lumber and other forest products, and they are looking to the United States for materials to meet some of their needs. Before the war, Europe as a whole was self-sufficient in timber, but due to heavy over-cutting, some destruction of resources and plant capacity during the war and the immensity of the task of restoration, requirements are expected to exceed probable European production by substantial amounts.

The anticipated heavy demand for timber intensifies a problem which existed before the war. Incomplete information now available indicates that the amount of timber removed annually from U.S. forests exceeds the net growth of usable wood; most of our forest land is understocked and not producing to its capacity; age-class distribution is irregular and deficient in certain age groups, critical shortages are in the offing for certain key species; and there is an urgent need to build up our forest growing stock so that timber supplies may be sufficient to meet either normal or emergency needs.

About half the forest land in the United States, 305 million acres, had been surveyed prior to the war. Appropriations during the war were on a less than maintenance basis since they were insufficient to extend the survey to areas not yet covered, or even to keep the information for areas already surveyed up to date.

The problems that must be met require the completion of the forest survey as rapidly as possible. Full knowledge of our supply of wood, which is a renewable raw material, is needed in considering problems of foreign and domestic needs, and the problems of immediate consumption in relation to future forest productivity. Increasing U.S. participation in world affairs and a prospective world shortage of forest products makes such knowledge of utmost importance as a basis

for policy formation to safeguard U.S. timber resources. Complete information is needed to guide industry in both the harvesting and growing of timber, and to aid forward planning for the location and extent of such public work programs as may be needed to bring the forests to the essential level of productivity.

Plan of Work: The initial inventory of the forest lands of the United States should be completed during the next 7 years. About 325 million acres remain to be inventoried. About 40 million acres will be covered in 1947, 50 million acres in each of the succeeding five years, and 35 million acres in the 7th year.

The Forest Survey should be expanded to the level recognized as needed by Congress through the passage on May 31, 1944 of Public Law 321, authorizing and directing a national survey of forest resources. This would mean an increase of $846,000 over 1946 and provide a total appropriation of $1,000,000 in 1947. Of this, $750,000 would be used for initial inventories of unsurveyed areas and $250,000 for bringing past surveys up to date.

Initial surveys would be carried out on 40 million acres in the Northeast, Appalachian, Central States and California regions. Bringing survey data up-to-date and thus reporting on the effects of wartime drain, would be done in the four northwestern States, the Lake States, the eleven southern States, and the Inland Empire.

Field work is to be carried on under the immediate direction of the appropriate forest and range experiment stations.

(b) An increase of $909 for placing on a full-year basis in 1947, within-grade salary advancements which are estimated to be in effect for only a part of the fiscal year 1946.

WORK UNDER THIS APPROPRIATION

Objective: To provide and maintain information on the forest resource of the United States, including its condition, area, volume, location, quality, rate of growth, and rate of drain; to determine the requirements for forest products; to study problems of the forest economy as revealed by this survey; and to make special studies related to the economic problems of forest ownership, management, production, utilization and consumption.

The Problem and its Significance: Approximately 630 million acres, or one-third of the total area of the United States, is in forest land, three-fourths of which is commercial and one-fourth noncommercial. The forest stands vary from heavy virgin forests, now mostly in the western states, to light and scattered second growth, mostly in the east. Some of the timber is readily accessible; some is economically inaccessible. Some timber is of the size and quality to make it highly desirable and useful; some is so poor it cannot be harvested economically. New growth is being produced abundantly on part of the forest land; other lands are too poor to produce a forest stand, or fires or heavy cutting have prevented regeneration. Some of the timber is still close to consuming markets, but much of it can be brought to market only at considerable cost. Detailed knowledge of these conditions is essential to an understanding of our forest opportunities and problems. The means of acquiring this knowledge is through forest resource studies - the forest survey and forest economics investigations.

The function of the forest survey is to inventory the forest stand, to show where and in what volume trees of different species, age and quality are located, to determine how fast stands of different quality and value are being depleted through cutting and other losses, and the nature, location and extent of new forest growth. Without this information there can be no intelligent appraisal of the storehouse of value in our forests nor of the problems of utilizing, replacing, and protecting our forest wealth. With this information there will be a sound basis on which public and private agencies may develop plans and programs which will assure adequate supplies of forest products for the future and proper forest land use.

In addition to providing these basic data, the forest survey discloses many special problems of local, regional or national interest. Some of these problems are economic in nature, and serve as a starting point for forest economics investigations. These investigations are concerned with the relations of industries and people to forest resources. They are concerned with the economic opportunities of managing and utilizing forests, and with the problems of cut-over lands, impaired watersheds and depleted forest ranges when these opportunities are gone. They are investigations of the economics of forest land ownership, of forest management and sustained yield, and of production and utilization. Investigations are also required to study problems of a special economic nature as a guide to the formulation of policy and programs of national forest administration, activities dealing with forest fire cooperation with states, and in cooperative activities with farmers and other private forest enterprises.

General Plan: The forest survey was initiated in 1930. The objective is accomplished by a field inventory and analysis of both public and private lands and a study of current and prospective production and consumption of forest products and the influencing factors. The inventory field work is being done under the direction of the regional Forest Experiment Stations and the requirements phase by a central unit in Washington, in cooperation as appropriate with the Stations and Forest Products Laboratory with general correlation of both from the office of the Chief of the Forest Service in Washington. The general plan is to cover unsurveyed territory as rapidly as conditions will permit. Findings of the survey are compiled and analyzed, and reports are issued by counties or groups of counties, states, and forest regions as soon as possible after completion of the field inventory. Subsequently the data for the territory covered are brought up to date from time to time through the field check and office computations. Following the completion of the entire country by the initial inventory, the aim will be to keep the data current thereafter.

Forest economics investigations are of two kinds: (1) those that extend over a period of years and must be conducted continuously, such as studies of the economics of forest management, and (2) those that are oriented to the present critical problems growing out of maladjustments in the forest economy. Close working relationships exist with a number of other groups, including State experiment stations, universities, trade assocations, the Bureau of the Census, and other Federal bureaus.

Examples of Progress and Current Program: During 1945, as in the other war years, the activities carried on under this appropriation have been directed primarily to the collection, analysis and presentation of information which would be of greatest value in meeting war demands for timber products. Regular projects whose maximum usefulness depended on continuity of operation were continued on a minimum maintenance basis.

Resource Surveys: Public Law 321, approved May 31, 1944, increased the total authorization for the forest resource inventory from $3,000,000 to $6,500,000, increased the maximum annual expenditure for inventory studies from $250,000 to $750,000, and authorized an expenditure not to exceed $250,000 annually to keep survey information on a current basis. Total funds available in F.Y. 1945 exclusive of overtime were about $140,000 and about 32 man-years were spent on the project.

With lumber recognized as one of the most critical major war materials, the activities of the forest survey during the last year were devoted to a considerable extent to supplying information on war requirements. Consequently it was not possible to extend the initial inventory of forest resources to any new areas, nor was it possible to keep information on surveyed areas up-to-date on a completely satisfactory basis. A reinventory of two counties in the Pacific Northwest was completed and in the South current resource information was maintained for 11 states by applying growth and drain estimates to past survey data. Further progress was made in preparing reports, and findings have now been released in 228 reports and forest type maps for 16 states. There remain, however, some 325 million acres, or more than 50 percent of the total forest area, for which no forest inventory has been made.

Considerable progress has been made in revising the theory and design of inventory techniques in preparation for renewed Survey activities during the post-war period. Universal form-class tables have been prepared to aid in the more rapid estimation of timber volume. Sampling techniques have been improved. The increasing demand for accurate forest-resource information for small areas has been recognized, and means of revising survey methods to provide these data have been explored. The most promising method seems to be through the use of aerial photographs. Because of the many other advantages of this survey technique, careful study has been given to the methods of preparing and interpreting aerial photographs. This survey method will continue to receive intensive study during the current year.

Production difficulties during the war increased the need of industry for forest resource information, and point to a constantly growing demand for this type of information. Manufacturers of forest products seeking new plant locations, new sources of supply, or new holdings of timber land to supply material on a sustained yield basis turn to forest survey results. On a broader basis, cities, States, and regions rely on survey data in preparing for post-war reconversion and stable industrial development. The Army Engineers and other agencies interested in watershed protection and streamflow problems require the resource information developed by the forest survey.

Another activity which was started during the last year and which will be brought to completion during the current year is a reappraisal of the forest resource and its management in terms of present and future needs. This study will bring up-to-date previous analyses of a similar nature. Based on forest survey data insofar as they are complete and on new studies being made, the reappraisal will present a picture of the quantity, quality, distribution, growth, and drain of the forest resources in the various regions. To gain perspective on the growing stock needed to assure an annual growth large enough to meet prospective requirements, especial attention is being given to an analysis of the adequacy of the available stand in each region to sustain the current output of forest products. The character of forest practices during the war years, the extent to which forest lands are now under various degrees of forest management, potential contribution of forest industries to post-war employment, and the possible role of the United States in the world timber trade are also being examined.

Monthly surveys of lumber production and saw-mill stocks and quarterly surveys of distributors' lumber stocks have been continued. In addition to the regular quarterly reports on the various factors affecting lumber production, such as manpower, equipment, cost-price relationships, weather, and markets, a number of interim reports have been prepared to meet specific needs. Quarterly forecasts of lumber production have been made to aid the Lumber and Lumber Products Division of the War Production Board in their allocations of lumber under Order L-335. Estimates of current lumber consumption by uses, and forecasts of prospective consumption for the immediate post-war period and for the next decade have been made.

Special studies have been made to disclose production and inventory trends of poles and railway cross ties, to determine requirements and production of containers and fuelwood, and to discover sources of mill waste for the production of alcohol. Production problems affecting the supply of such critical items as tent pins, picker sticks and shunt poles have been the subject of special studies, and recommendations have been made to overcome production difficulties.

A number of studies have been made of equipment and supplies needed to maintain log and lumber production, including studies of truck movement of logs, surveys of crawler tractor and stationary power unit needs, and requirements for such items as tires, and antifreeze. The relations of price regulations to production have been investigated, especially as they affect the production of small mills or as they result in the diversion of material from one use to another.

Forest Economics:

Area analyses: Two studies concerned with the relation of the Forest resource to industrial and employment opportunities have been completed in the past year. One of these was conducted in the anthracite region of Pennsylvania, an area suffering severely from the decline of both coal and forest products production. The other was carried on in the Grays Harbor region of western Washington, where resources still support forest industries though on a declining level. The two studies analyzed the conditions essential to an increased contribution from the forest resource to industrial stability, and recommended steps to be taken to aid the industrial recovery of the areas. The interest with which these analyses and recommendations have been received by the people of the study areas and by those in other regions indicates that the unit study program can serve as a most useful procedure in future economic investigations concerned with the development and location of forest industries and with the type of forest management necessary to support forest industries.

Forest cooperative: Nearly half of the 60 million acres of forest land in the Northeast is in small holdings and more than 15 million acres is owned by 400,000 farmers. Cooperatives are one solution to the problem of obtaining forest management on these holdings. The Otsego Forest Products Cooperative Assocation at Cooperstown, New York, which has a sawmill, yard, and dry kilns, and is sponsored by the Forest Service to illustrate the possibilities in the development of this type of farm forest enterprise, has continued to provide benefits to its members and valuable information to all farm forest owners. In calendar year 1944, the sawmill produced about 2 million board feet of lumber, mostly high-grade hardwoods, and 90 percent of the production was sold outside the area, bringing in about $100,000. Steady employment was given 45 persons. The financial condition of the association improved since its assets are $19,000 more than two years ago, membership has grown to over 960, and more than 30,000 acres of forest land bearing 50 million board feet of growing stock is now under intensive management. The ten years' experience of this

cooperative association has provided knowledge which will be of great benefit to similar organizations. It has demonstrated that if a cooperative is to be successful the people must need its services and advantages, recognize this need, and be desirous of earnestly promoting a cooperative undertaking. The availability of the forest resource must be carefully considered to avoid optimistic over-expansion. Expansion from a small start will probably be more successful than an overly ambitious beginning, especially if the latter requires borrowing under restrictive terms. Only those who can participate by supplying timber should be sought as members, and management of high quality is essential to success. If these principles are followed, forest cooperatives can perform valuable and essential services in providing profitable markets for the timber of scattered farm holdings, and in promoting forest management.

Fire damage and cost studies: Two new studies were conducted last year in the field of fire damage and protection costs, one in the Piedmont area of Virginia and the other in Snohomish County, Washington. The purpose of these studies was to determine, for units representative of larger areas, the monetary value of damage to timber, watersheds, recreation, etc., caused by forest fire, and the level of fire protection which is economically justifiable. Without such studies there is no certainty that protection is not at an uneconomic level, either too intensive or not intensive enough. These studies, with those to be made in other areas, will show at what point an additional expenditure for protection will equal the resultant saving in lessened fire damage. The findings from these studies should result in appreciable savings, both in protection expense and in the prevention of fire losses.

(i) Forest Fire Cooperation

Appropriation Act, 1946		$7,300,000
Anticipated supplemental for additional costs due to the Federal Employees Pay Act of 1945.		+40,000
Total anticipated available, 1946		7,340,000
Budget estimate, 1947.		8,300,000
Change for 1947:		
Overtime decrease.	-5,152	
Increase.	+965,152	+960,000

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
1. Cooperation with States in fire prevention and suppression...	6,246,188	7,334,848	8,300,000	+965,152
2. Overtime pay.....	31,467	5,152	- - -	-5,152
Covered into Treasury as miscellaneous receipts; Public Law 529	80	- - -	- - -	- - -
Unobligated balance.....	22,265	- - -	- - -	- - -
Total available.....	6,300,000	7,340,000	8,300,000	+960,000
Anticipated supplemental.	- - -	-40,000	- - -	
Total estimate or appropriation	6,300,000	7,300,000	8,300,000	

INCREASES OR DECREASES

The net increase of $960,000 in this item for 1947 consists of the $5,152 decrease for overtime, and an increase of $965,152 to expand and intensify cooperative fire protection in the 42 States and Hawaii qualifying under the Clarke-McNary Law of June 7, 1924. The increase will all be allotted to the cooperating States.

Objective: To reduce to a minimum the losses from forest fires and fire suppression costs. This involves (1) prevent fires from starting, (2) suppress fires that do occur as soon as possible, and (3) effective use of protection funds and facilities. More specifically the objective is to help the cooperating agencies to build up and maintain competent fire control organizations, to see that the approved protection plan for each State is effectively carried out and that the Federal funds are wisely used. The Congress on May 4, 1944 (Public Law 296, 78th Congress) raised the authorization for Federal participation in this work to $9,000,000 by progressive steps. The authorization for the fiscal year 1947 is $8,300,000.

The Problem and Its Significance: This cooperative project applies only to those State and privately owned forest lands justifying public aid in forest fire control. It covers some 431 million acres which includes 79 percent of the Nation's commercial forest lands. They are the best and most accessible timber growing areas and from them comes 90 percent of our lumber and other wood products. Because of their accessibility most of these private lands are within easy reach of large numbers of people, travel and use are heavy and consequently the fire hazards are higher than in more remote forest areas.

Based on pre-war (1938) estimates it would cost $18,729,000 annually to protect the entire 431 million acres adequately. The Clarke-McNary Law authorizes 50 percent Federal financial participation. During the calendar year 1944, the latest 12-month period for which figures are available, a total of $12,951,523 was spent on fire control by all cooperating agencies. Of this amount, the Federal Government allotted to the cooperating States $4,406,186 or about one-third. This is exclusive of that portion of the Clarke-McNary appropriation designated by the Congress to be used for strengthening protection on areas of special military importance ($2,300,000 for fiscal year 1944 and $1,000,000 for fiscal year 1945).

The first measure necessary for the successful practice of forestry is adequate protection from forest fires. Fully 90 percent of all forest fires are deliberately set or are caused by carelessness and so are preventable. For this reason, the cooperative program is aimed to prevent fires as well as to suppress them before they reach large proportions. In large measure, the job is a public responsibility - one in which the community, the State, and the Federal Government must join and cooperate with the landowners. Otherwise, the job will not be done and the public - rather than the landowner - is usually the principal loser.

Plan of Work: Annual work plans for fire control are prepared jointly by State and Federal agencies. The Forest Service furnishes leadership and checks on State performance to the extent needed to safeguard the Federal investment. Direct supervision of the field work is under direction of the States. Federal funds are made available to the State on a reimbursable basis - that is, the State and its recognized cooperators must actually make expenditures before qualifying for Federal funds. Budgets are required from the States indicating in detail the personnel and equipment required and outlining the plan of work contemplated for the current fiscal year. Inspections and audits are made by the Forest Service to verify compliance with established standards and requirements. Technical assistance and advanced techniques are made available to the individual States.

CHANGE OF LANGUAGE

The estimates propose a change in language in the last phrase of this item, as follows (new language underscored, deleted matter enclosed with brackets):

> ***of which not to exceed {$57,584 and $5,000] $57,982 shall be available for personal services [and for the purchase of supplies and equipment, respectively,] in the District of Columbia.

This change deletes the limitation on the amounts which may be expended in the District of Columbia for supplies and equipment, because the limitation is no longer considered necessary.

Obligations for supplies and equipment in the District of Columbia during the past five years, as contrasted with the limitations for those years, are outlined in the tabulation given below:

Fiscal Year	Limitation	Amount Obligated
1945	$5,000	$215.08
1944	5,000	905.19
1943	2,500	967.80
1942	2,500	559.98
1941	2,500	2,024.36

The above table indicates that obligations for supplies and equipment in the District of Columbia have been well below the amounts authorized and, accordingly, the limitation carried in the Appropriation Act is considered unnecessary. Under the existing language, the General Accounting Office establishes a separate accounting symbol for this limitation. The work involved in maintaining the accounting records for the expenditures under the limitation in the Department of Agriculture and the General Accounting Office does not appear to be justified for such a small expenditure. No particular increase is contemplated in purchases of supplies and equipment for use in the District of Columbia.

WORK UNDER THIS APPROPRIATION

Project 1. Cooperation with States in forest fire prevention and suppression:

The objective is to extend Federal aid in continuing and improving the pre-war standards of essential fire control on the 301,000,000 acres of State and private forest and watershed lands now being protected and to cooperate in the extension of forest protection to at least part of the remaining 130,000,000 acres of non-Federal lands in need of protection but still without it.

Over three-fourths of the Nation's forest lands are in State and private ownership. Undoubtedly the heavy demand for forest products at home and abroad will continue, if not expand. Safeguarding this supply of raw material is of fundamental importance.

During recent years the cost of fire control has increased. Salaries and wages are higher and costs of fire-fighting tools and equipment have mounted. State protection personnel turnovers of 50 percent have not been uncommon, making it necessary to spend more money for training purposes.

The Clarke-McNary Law, enacted in 1924, has been most effective in stimulating protection by State and local agencies. Federal leadership stimulates State legislative action and gives stability to State and private protection organizations. Appropriations by the States and private landowners for fire control have shown steady and substantial increases. For the fiscal year 1946, budgeted State and private funds amount to $13,483,331, an increase of over 2-1/2 million dollars over fiscal year 1945.

During the calendar year 1944, the latest period for which statistics are available, fire protection under this program was given 301 million acres of State and private forest lands. A total of 56,148 fires was reported on the State and private forest lands under organized protection. These burned only 0.76% of the protected area in calendar year 1944 as compared with 1.29% for calendar year 1943 and 1.32% for 1942. This is especially encouraging in view of continued shortage of experienced headquarters and field personnel in State organizations. By way of contrast, there were 66,096 fires on the 130 million acres of State and private forest lands which need but receive no organized fire protection. 10.68% of these unprotected areas was burned over.

The obligations for the regular program for fiscal year 1945 were $13,945,889 of which the Federal Government contributed $5,279,523 or 38%; the States, $6,561,776, or 47%, and the cooperating private owners, $2,113,590, or 15%. Heavy and intensified logging operations caused by urgent need of forest products in the war effort continued

throughout the year. State protection organizations, therefore, continued to face added hazards in the nature of heavy accumulations of logging slash added to those of the three previous years. Holding the area burned to less than 1% of the protected area is gratifying under conditions of increased hazard and shortages of labor, equipment, and experienced supervisory personnel. Fires on protected areas caused a total damage estimated at $7,075,000 which was $2,208,000 less than during the previous year.

Intensified forest fire control was continued during the fiscal year 1945 in areas of special military importance, such as military reservations, communication, power and transportation lifelines and commercial plants producing vital war materials. Federal funds in the amount of $1,000,000 were made available on a non-matching basis for the fiscal year 1945. Reports from cooperating States indicate that the program successfully reduced the number of fires in such areas and kept those which did occur to relatively small proportions.

State Allotments for Forest Fire Cooperation
Fiscal Year 1946

State	State and Private Funds Budgeted	Federal Allotments On Matching Basis	Federal Allotments On Non-matching Basis
Alabama	$413,800	$182,407	$4,000
Arkansas	195,667	151,665	4,000
California	2,400,873	902,823	- - -
Colorado	34,625	34,625	- - -
Connecticut	a/ 130,584	44,883	- - -
Delaware	12,780	6,326	- - -
Florida	553,202	278,155	15,000
Georgia	292,545	177,469	10,000
Idaho (N)	179,799	98,450	25,000
Idaho (S)	39,529	21,143	3,750
Illinois	50,427	17,937	- - -
Indiana	94,605	33,444	- - -
Kentucky	58,656	50,125	- - -
Louisiana	257,355	186,093	3,000
Maine	193,702	126,685	- - -
Maryland	201,386	51,804	10,000
Massachusetts	275,564	79,796	10,000
Michigan	694,838	417,207	- - -
Minnesota	385,206	255,311	7,000
Mississippi	250,887	124,957	7,400
Missouri	52,582	41,449	10,000
Montana	116,918	65,505	- - -
Nevada	21,382	8,147	- - -
New Hampshire	a/ 94,624	44,638	- - -

State Allotments for Forest Fire Cooperation
Fiscal Year 1946 (Cont'd)

State	State and Private Funds Budgeted	Federal Allotments On Matching Basis	Federal Allotments On Non-matching Basis
New Jersey	$253,026	$100,966	---
New Mexico	24,211	8,755	---
New York	339,853	188,011	---
North Carolina	313,486	164,720	$21,000
Ohio	108,400	34,144	---
Oklahoma	40,273	40,272	---
Oregon	1,199,088	586,940	160,000
Pennsylvania	214,527	213,500	---
Rhode Island	57,961	25,300	---
South Carolina	566,158	224,783	6,100
South Dakota	a/ 11,957	4,800	---
Tennessee	111,607	94,132	4,500
Texas	165,215	113,195	4,000
Utah	32,507	12,124	1,000
Vermont	40,362	21,628	---
Virginia	297,480	113,763	55,000
Washington	2,076,794	651,441	135,000
West Virginia	a/ 201,569	119,441	---
Wisconsin	420,912	259,298	---
Hawaii	6,409	2,750	---
Administration, Inspection, Prevention and Special Services to States	---	383,993	39,250
Grand totals	13,483,331	6,765,000	535,000

a/ Fiscal Year 1945 figure used -- Fiscal Year 1946 budget not received.

(j) Farm and Other Private Forestry Cooperation

Appropriation Act, 1946		$732,500
Anticipated supplemental for additional costs as a result of the Federal Employees Pay Act of 1945		36,000
Total anticipated available, 1946		768,500
Budget estimate, 1947		771,500
Change for 1947:		
Overtime decrease	$-5,591	
Increase	+8,591	+3,000

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
1. Cooperation with States in procurement, production and distribution of forest-tree and shrub seeds and plants for farmers (Forest Service)				
Under Clarke-McNary Act, section 4	$81,426	$83,700	$83,700	--
Under Norris-Doxey Act	38,559	39,624	39,624	--
Total, Project 2 ..	119,985	123,324	123,324	--
2. Cooperation with States for extension activities in developing farm forestry (Extension Service):				
Under Clarke-McNary Act, section 5	55,770	63,619	65,766	$+2,147
Under Norris-Doxey Act	27,302	37,407	42,407	+5,000
Total, Project 2 ..	83,072	101,026	108,173	+7,147 (1)
3. Farm woodland management projects:				
Under Norris-Doxey Act:				
Forest Service	239,263	414,295	415,263	+968
Soil Conservation Service	114,370	--	--	--
Total, Project 3	353,633	414,295	415,263	+968 (2)
4. Farm forestry investigations (Forest Service):				
Under Norris-Doxey Act:	20,252	21,901	21,938	+37 (2)
5. Cooperation with timberland owners in formulating and applying principles of sustained yield management (Forest Service)	84,842	102,363	102,802	+439 (2)

(Continued on next page)

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
6: Overtime pay	50,043	5,591	- -	-5,591
Covered into Treasury as miscellaneous receipts, Public Law 529	89	- -	- -	- -
Unobligated balance	69,550	- -	- -	- -
Total available	781,466	768,500	771,500	+3,000
Anticipated supplemental	- -	-36,000	- -	
Total estimate or appropriation	781,466	732,500	771,500	

INCREASES OR DECREASES

The net increase of $3,000 in this item for 1947 consists of the $5,591 decrease for overtime, and the following:

(1) An increase of $7,147 under the project "Cooperation with States for extension activities in developing farm forestry (Extension Service)" composed of:

(a) An increase of $56 for placing on a full year basis in 1947, within-grade salary advancements which are estimated to be in effect for only a part of the fiscal year 1946.

(b) An increase of $7,091 to provide for a part of the Federal Employees Pay Act costs in 1947 which are being absorbed in 1946. The inability to secure qualified personnel resulted in accrued savings in the first six months of the fiscal year 1946, permitting the absorption of a portion of the additional costs of the Federal Employees Pay Act. The work has suffered due to lack of trained workers and additional assistance is essential to an effective program. With improvement in employment conditions and the return of veterans, it is anticipated that the entire amount requested for 1947 will be needed.

(2) Increases totaling $1,444 under projects 3, 4, and 5 for placing on a full year basis in 1947, within-grade salary advancements which are estimated to be in effect for only a part of the fiscal year 1946.

CHANGE IN LANGUAGE

The estimates include a proposed change in the language of this item as follows (deleted matter enclosed with brackets):

*** and (2) through the Forest Service to [cooperate with and] advise timberland owners and associations, ***

The proposed change in language deletes the words "cooperate with and" for the sole purpose of shortening and simplifying the wording of the item.

These words are considered surplusage, and, therefore, need not be retained in the annual appropriation act, the cooperative work being authorized by the Acts of June 7, 1924 (16 U.S.C. 568) and May 18, 1937 (16 U.S.C. 568b). Elimination of the language from the annual appropriation act will not—in any way—change the scope or character of the work performed under this appropriation item, or the authority of the Department to cooperate with other agencies, institutions, organizations, or others in the conduct of such work.

WORK UNDER THIS APPROPRIATION

Activities under this appropriation fall into three general categories:

1. Cooperation with States in the procurement, production, and distribution of forest-tree and shrub seeds and plants for farmers.

2. Technical assistance and advice to 3-1/2 million farmers owning woodlots totaling 185 million acres.

3. Technical assistance and advice to owners of non-farm forestry holdings, large and small, in order to promote better forestry practices.

1. Tree distribution: The following tabulation shows the number of forest tree seedlings and transplants distributed to farmers by States during the last three calendar years:

State	1942	1943	1944
Alabama	1,540,450	1,250,449	921,350
Arkansas	1,516,796	280,000	355,550
Colorado	234,500	200,500	86,600
Connecticut	103,800	42,500	126,100
Delaware	31,500	29,800	47,000
Florida	3,007,100	2,995,800	1,877,400
Georgia	6,892,345	3,557,730	1,489,750
Hawaii	86,100	18,700	35,100
Idaho	204,000	152,430	89,500
Illinois	6,536,300	644,800	461,900
Indiana	1,299,070	1,032,080	1,225,600
Iowa	837,308	246,900	178,000
Kansas	479,700	340,177	325,813
Kentucky	495,700	162,600	128,300
Louisiana	1,565,998	401,000	58,000
Maine	134,150	71,850	30,750
Maryland	160,725	130,850	106,665
Michigan	2,696,654	1,704,449	1,622,750
Mississippi	4,551,700	2,399,400	915,000
Missouri	1,195,700	861,200	798,253
Montana	295,200	227,253	220,395
Nebraska	863,800	974,000	1,045,200
New Hampshire	306,775	96,670	97,377
New Jersey	727,750	468,900	290,200
New York	5,640,000	4,847,000	4,122,000
North Carolina	1,436,800	703,000	362,200
North Dakota	662,600	434,913	349,900
Ohio	2,109,191	1,397,185	988,775
Massachusetts	476,900	238,400	465,800

State	1942	1943	1944
Oklahoma	655,400	301,900	289,704
Oregon	366,000	112,400	174,300
Pennsylvania	3,808,500	3,873,500	2,726,000
South Carolina	7,442,237	3,676,050	4,320,200
South Dakota	764,500	579,250	241,300
Tennessee	1,929,300	836,241	419,740
Texas	2,223,900	948,200	891,500
Utah	69,100	63,200	58,600
Vermont	319,700	169,413	109,810
Virginia	590,900	396,810	213,400
Washington	67,685	81,100	70,847
West Virginia	638,990	468,400	733,000
Wisconsin	8,518,000	7,745,100	6,484,300
Wyoming	73,500	45,400	32,800
Puerto Rico	662,200	1,143,000	2,393,300
	74,218,524	46,350,500	37,980,029

Although the demand for planting stock in 1944 was larger than in any year of the war, the shortage of labor, particularly for weeding and care of seedlings in the nurseries, resulted in a still lower distribution than in 1942 and 1943. Only 9 states showed any increase over 1943 distribution. In anticipation of filling an unprecedented demand for 1947, the states are placing particular emphasis on improving their physical plants. Plans providing for more efficient irrigation and sprinkler systems, for improved equipment and needed repairs are ready to be put into effect as soon as additional labor and funds are available. All States are ready, waiting and anxious to embark on a tree-production program of one-quarter billion forest tree seedlings and transplants.

2. Technical Assistance to Farmers:

Farm woodlands yield about one-third of our nation's forest products. One-fourth of the total sawlog supply, 38 percent of our pulpwood supply, and a large quantity of veneer logs originate on farms. In addition to this, farm woodlots furnish the bulk of fuelwood and fence post requirements of the United States. Many of the specialty woods important in the war, such as black walnut for gunstocks and dogwood for shuttle blocks were harvested from farm woodlots. During the past year and because of the national emergency, work with farmers was directed toward emphasizing the importance of increased production of urgently needed forest products and, at the same time, discouraging destructive overcutting so that the basic resources of woodlots could be assured for future timber crops. The program throughout is a cooperative undertaking in which all State and Federal agencies in the field of forestry are encouraged to participate. The Federal effort is largely one of stimulating general interest, guidance and coordination of effort. The actual work on the ground is carried on largely under direction of State agencies.

(a) Education: Farm forestry specialists of the State Extension Service had a vital part in making farm forestry products available for war needs through contacts with farmers, demonstrations, press releases, radio, distribution of literature and posters, and assistance in woods operations. Close cooperation was maintained with the War Production Board, Office of Price Administration, Petroleum and Solid Fuel Administrations for War, State and County War Boards, and other Department and Bureaus. Extension foresters worked closely with the Timber Production War Project in stimulating production of lumber and pulpwood. Timber marketing has been a major program in all timbered areas. In some States timber marketing committees were organized, cooperative arrangements with industry and other steps were taken to expedite the location of forest resources and the channeling of products to the war industries. In spite of a full program of war food production and labor shortages, farmers have continued to show a substantial interest in reforestation and the establishment of shelterbelts. Many farm windbreaks and shelterbelts were established by farmers in the past year for protection to victory gardens, field crops, livestock and farmsteads. In the Plains States, extension agents were active in stressing that farm owners give proper care and management to field shelterbelt plantings. 4-H Club members and other rural youth have also been helpful in tree planting and are showing an increased interest in wildlife work.

During the past fiscal year, 42 States and 2 Territories cooperated with the Department of Agriculture in farm forestry extension. 57 State extension foresters were employed. These specialists, responsible for leadership and development of State programs, conducted their work through some 4,000 county agricultural agents who assisted farmers in adopting farm forestry practices.

Extension Foresters in over half of the States took a leading part in rural fire control projects thereby contributing to substantial reductions in farm fire losses over the previous year.

Farm forestry extension during the coming fiscal year will stress production of farm timber. Marketing of farm forest products, better timber cutting practices, protection of farm property against fire, utilization of home-grown timber for use on the farm, mechanization of farm woodland operations, preservative treatment of lumber and posts and 4-H club forestry activities will all contribute to meeting our national timber needs.

(b) Farm woodland management projects: Most farmers need assistance in managing their farm woodlands. Direct assistance is rendered the farmer with one of the objectives of the service being farmer participation in whatever action i recommended for his woodland. This program is handled cooperatively through State agencies on a 50-50 financial basis.

This program is changing substantially the farmer's attitude toward his woodland. Instead of seeing only periodic cuts at long intervals, more and more farmers are learning to handle their timber as another crop to be harvested on a continuous-yield basis. The farmer is learning to cut and market a crop which heretofore usually was handled by someone who had very little interest in his over-all farming enterprise.

Farm woodland products went to war in large quantities. Many farmers contributed labor both in the woods and in the mills to help in the emergency period when regular woods labor was scarce. In stimulating this production, the program has been equally successful in getting better forest practices in the farm woodland. In helping and guiding the farmers to see that they secure a fair price for a known quantity of their forest products, the program has also benefited the timber buyers and sawmill men. These latter see that it is to their advantage in the long run for farmers to receive a fair price for their products and for the woodlots to be left in condition to produce continuous crops of logs and other forest products so vital to the dependent mills and related forest industries.

The need to develop and maintain a high degree of productivity on the farm woodlands in the nation will not diminish. Thousands of new uses for wood, millions of new homes in the period ahead and urgently needed repairs to both rural and urban buildings of all types create a demand that cannot be met unless farm woodlands contribute their maximum share of forest products. At present they are producing at one-third to one-half of their potential capacity. The farm woodland management project in areas which they serve are increasing this productivity to full capacity in hundreds of cases which will result in continuous yielding of forest products of higher quality to the consumer and of higher value to the farmer.

During , a total of 9,184 farmers were given marketing and management assistance on 894,606 acres. 4,620 farmers performed harvest and improvement cuttings on 204,766 acres. Wood products cut from farm woodlands with the assistance of farm foresters total 437 million board feet of products during , as compared to 345 board feet in 1944. In addition to the wood products harvested there were produced 5,779 barrels of gum naval stores and 7,101 gallons of maple sirup.

(c) Farm Forestry Investigations: In common with other forest research, the objectives of farm forestry investigations during the past few years have been directed toward meeting war and wartime civilian needs for forest products and the backlog of civilian needs during the reconversion period. The program includes studies of (1) grade recovery of logs produced on the farm and the effect of the results on improved markets for farm woodlot products, (2) the needs for forest products to meet a large and active container market to the fullest extent possible from local sources, (3) determining the place of farm woods in farm economy in sections predominantly agricultural, (4) determining how and to what extent cooperative marketing can lead to maximum returns in areas predominently forested, (5) more efficient methods of harvesting cordwood to meet the shortage in labor and transportation, and (6) the regeneration of cotton wood and other species for immediate farm needs in the Delta region of Mississippi.

Current progress is being made in the solution of these various problems, including the issuance of bulletins and other releases giving pertinent information as it becomes available.

All of these studies are being conducted in cooperation with State Agricultural Experiment Stations which contribute funds or services at least equal to Federal expenditures on the projects.

(3) Technical Assistance to Non-Farm Timberland Owners:

Requests from non-farm forest land owners and operators for technical advice on management of their timberland also increased greatly during the year. Technical advice and assistance were given many hundreds of owners and operators, mainly in marking or designating the trees to be cut, but also on all other phases of forest management problems from planting through harvesting and milling operations. Many requests for assistance were due to the urgent demand for an increased production of lumber, pulpwood and other forest products for immediate use in the war.

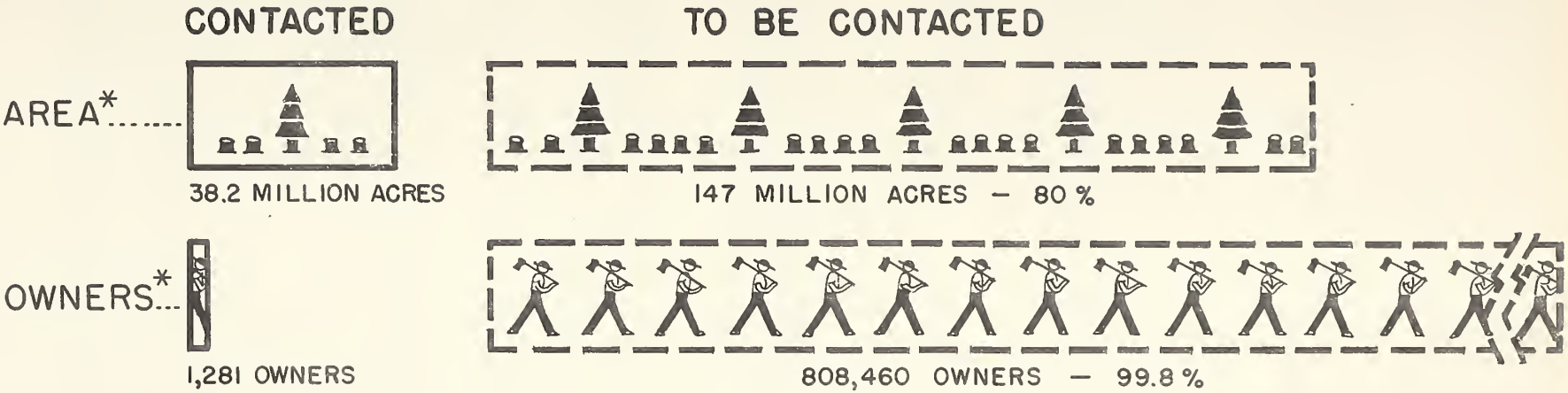
Although only a small proportion of the total land owners and operators could be reached, excellent results in terms of improved management of their forest resources were obtained. This is indicated by the attached graph showing the work done and yet to be done after 5-1/2 years of effort prior to assisting on special war jobs. While it has been possible to reach only 2/10 of 1% of the owners, 57% of those that were reached applied improved management practices. Our inability to provide more assistance was detrimental both to the production of the needed volume of wood products and to the condition of our forest resources, especially cutover areas.

Of all the privately-owned commercially productive forest land in this country, 60 percent is in non-farm ownership. Half of this is in relatively small ownerships of a few hundred to a few thousand acres. There are nearly one million such small non-farm timberland owners. This appropriation item is the only forest management aid available to owners of 60 percent of the nation's privately-owned forest land.

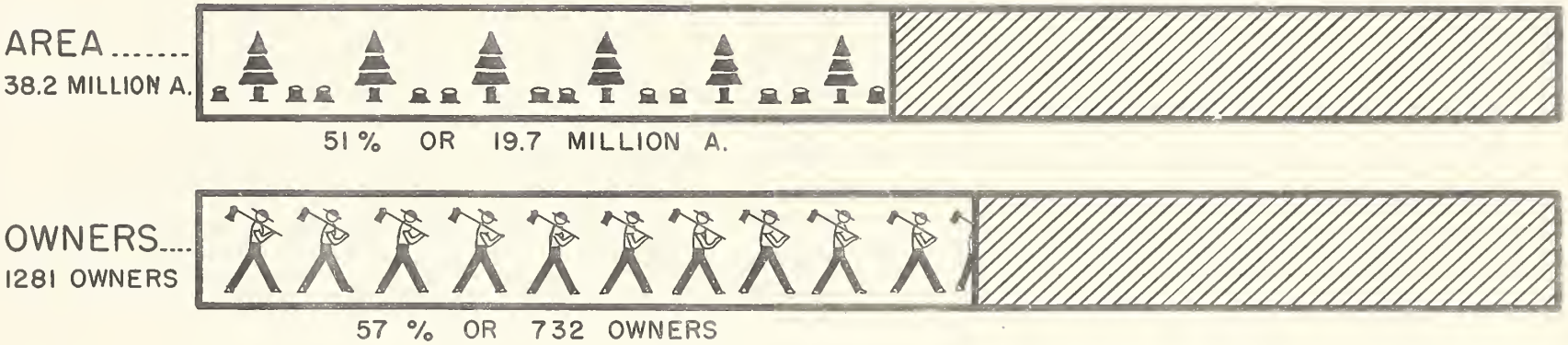
PRIVATE FORESTRY COOPERATION

WORK DONE AND TO BE DONE

(Non Farm Commercial Forest Land)



PERCENT OF CONTACTED OWNERS AND OWNERSHIPS CONVERTED TO IMPROVED MANAGEMENT



* Exclusive of Montana, Nevada, North Dakota, and Tennessee

USFS 1945

FOREST SERVICE

(k) Acquisition of Lands for National Forests

Appropriation Act, 1946 .....
Budget estimate, 1947 ..... +$3,000,000

PROJECT STATEMENT

Project	1945	1946	1947 (estimated)	Increase
1. Acquisition of lands for National Forests	58,284	- -	3,000,000	+3,000,000
2. Overtime pay	9,866	- -	- -	- -
3. Unobligated balance	6,850	- -	- -	
Total estimate or appropriation	75,000	- -	3,000,000	+3,000,000

INCREASE

An increase of $3,000,000 to resume acquisition of lands for protection of watersheds of navigable streams and production of timber pursuant to the Act of March 1, 1911 (16 U.S.C., 513-519, 521) and amendments thereto.

Objective: To acquire, within national forests and purchase units established with the approval of the National Forest Reservation Commission, those lands chiefly valuable for national forest purposes and which should be publicly owned and administered to protect the watershed functions thereof, to promote the growing of timber thereon, and to facilitate the effective and economical administration of the national forest units of which they are a part.

The Problem and its Significance: Within the 79 national forests and purchase units heretofore established with the approval of the National Forest Reservation Commission there remain in private ownership 24,345,000 acres, more or less, of acquirable lands chiefly valuable for national forest purposes out of a total acreage of such lands within these units of 47,184,000 acres, more or less. Exclusive of a small experimental forest which is complete, there are only seven of these units wherein 80 percent or more of the acquirable area is in government ownership. Six of the remaining units contain no national forest lands and in the others acquirable lands under government control range from 0.3 percent to 76 percent of the acreage available. Units in which less than one-half of the acquirable area is in government ownership are in the majority.

Watershed Protection. The navigability of river channels is largely dependent upon the maintenance of natural conditions of water and soil stabilization at the headwaters of such rivers. Devastating floods pouring large amounts of silt into river channels are augmented in large degree by the misuse of privately owned lands on the headwaters. Heavy cutting of timber, forest fires, and over-grazing have greatly impaired the absorptive capacity of the soil, thereby contributing to flood-water conditions. The restoration of forest lands to their natural state and normal high capacity to absorb precipitation is essential to the maintenance of navigable rivers.

Timber Supply. The unprecedented demand for timber and forest products for the war, has resulted in increased drain upon existing forest resources and increased the pace of liquidations of privately owned timber. The war has also emphasized and confirmed beyond any question the vital necessity of maintaining, not only for the economic welfare of the country but also for adequate national defense, adequate supplies of usable timber. Public ownership of forest lands not conclusively economic for private management is necessary to assure their continued and maximum productivity.

Public acquisition and management of established forests and the preservation or restoration of forests on lands more valuable for forest than for other purposes are essential steps in insuring an adequate supply of raw forest materials for the future. This is particularly evident in such regions as the Lake States where entire areas have been depleted of their available timber resources by private operators or owners of the lands, with no provision of a well-planned restoration of depleted timber supplies, and no assurance that the timber needs of future generations will be adequately met. The diminution of the natural resources of such areas has contributed tragically to the rapid deterioration of the economic and social welfare of the communities dependent upon the forests for livelihood.

Rehabilitation. Many people in the United States are dependent in whole or in part for their livelihood from the forests. The National Forests can and do provide full-time employment for many thousands residing within or adjacent to the forests, and the incomes of many other thousands are supplemented by part-time employment. In areas in which the forests have been entirely denuded, the opportunities for employment have been destroyed, with attendant decrease in the social and economic status of the residents of such areas. The restoration of these areas to their former and possible productive capacity of natural resources will contribute to the return of desirable social and economic standards for the people. This has already proven true in many areas in which National Forests have been established under the Act of March 1, 1911.

Plan of Work: Lands will be acquired after adequate appraisals, and after approval by the National Forest Reservation Commission as provided by Section 4 of the Act of March 1, 1911, in accordance with the procedures heretofore developed and employed. The 1947 appropriation would be used chiefly to further consolidate existing national forests and purchase units wherein acquisition had commenced prior to the war; the Budget estimate would provide for the acquisition of 450,000 acres, more or less, of lands.

CHANGE IN LANGUAGE

The estimates include the following new language to reinstate the land acquisition program for national forests under the provisions of the Act of March 1, 1911, as amended:

> For the acquisition of forest lands under the provisions of the Act approved March 1, 1911, as amended (16 U.S.C. 513-519, 521), $3,000,000, of which not to exceed $44,419 may be expended for personal services in the District of Columbia.

Except for the amounts included, the language of this item is identical with that of the fiscal years 1945, 1944 and 1943.

WORK UNDER THIS APPROPRIATION

This project has been concerned with the acquisition of land for national forest purposes by purchase, exchange and donation in 79 national forests and purchase units in the continental United States and Puerto Rico, under the provisions of the Act of March 1, 1911 (36 Stat. 961), as amended by the Acts of June 7, 1924 (43 Stat. 654) and March 3, 1925 (43 Stat. 1215), which provide for the acquisition of lands for the protection of the watersheds or navigable streams and rivers and for the production of timber.

During the period 1911 to 1945, inclusive, Congressional appropriations or allotments by Executive Orders from Emergency Funds have been made annually for the acquisition of lands under this project except for the years 1916, 1918, 1919 and 1921. The purchase program was curtailed during the past three years due to war conditions; thus the appropriations for 1943, 1944 and 1945 were used primarily to consummate pending land acquisition cases. Hence, progress under this project in the last several years has been small. No appropriation was specifically made for this purpose for the fiscal year 1946.

The work was started in 1911 with the purchase of land in the Appalachian areas of New England and Western North Carolina. During the past 34 years it has been extended to other areas in the Appalachian region from Pennsylvania to Alabama; to the Piedmont and Southern Pine areas of the South Atlantic and Gulf States; to the central hardwood belt of the Ohio and Mississippi Valleys and to the Lake States Region. A small number of units have been established and lands acquired in the far western states. The greater part of the units established under the project, however, are located east of the Great Plains.

Nearly all of the 79 purchase units established with the consent and approval of the National Forest Reservation Commission are areas where all or most of the land was in private ownership prior to the establishment of the units. The major part of this land should be in public ownership in order for it to contribute the optimum benefits to stream flow regulation and timber production. A few of the units in the West are within national forests that were established by withdrawal from the public domain, but which contain key areas in private ownership that should be acquired and administered by the Government in conjunction with surrounding national forest lands.

The following tabulation shows the status of the 79 purchase units as of June 30, 1944 and the progress made during fiscal year 1945:

	Gross Area (acres)	Non-Acquirable (acres)	Acquirable (acres)
Purchase Units as of 6/30/44 79 1/	54,411,536 1/	7,227,228 1/	47,184,308 1/
Part of the acquirable area under Forest Service Administration as of 6/30/44 (acquired by purchase, donation, exchange, transfer from other Federal Agencies and reserved from the Public Domain)			22,803,286
Balance to be acquired 6/30/44			24,381,022
Approved for purchase in F.Y. 1945			-5
Acquired by exchange in F. Y. 1945			-35,769
Acquired by donation in F. Y. 1945			-214
Returned to private ownership in F. Y. 1945 due to erroneous purchase			+214
Purchases previously dropped and reinstated in F. Y. 1945			-22

(Continued on next page)

	Gross Area (acres)	Non-Acquirable (acres)	Acquirable (acres)
Approved for purchase in prior years but dropped in F. Y. 1945			+335
Balance to be acquired 6/30/45			24,345,561
Estimated acquisition by exchange and donation in F.Y. 1946			-50,000
Estimated balance to be acquired 6/30/46			24,295,561

1/ The increase in these figures over those reported for the budget for 1946 is due to the inclusion in this statement of three purchase units - Ouachita and Ozark in the Arkansas and Sequoia in California - that were established under the Weeks Law of March 1, 1911 but have been reported for the past several years under the project for Land Acquisition - Forest Receipts Acts. The majority of the purchased lands in these units has been acquired under the Weeks Law and the units are being included in this project.

All figures quoted above for F.Y. 1945 are subject to slight change when annual statistical reports are checked and reconciled.

(1) Acquisition of Lands from National Forest Receipts

Appropriation Acts, 1945 and 1946	None
Budget estimate, 1947	+$392,000

PROJECT STATEMENT

Project	1945	1946	1947 (estimated)	Increase
1. Uinta and Wasatch National Forests, Utah	- -	- -	$40,000	+$40,000 (1)
2. Cache National Forest, Utah	- -	- -	10,000	+10,000 (2)
3. San Bernardino and Cleveland National Forests, Calif.-Riverside County	- -	- -	22,000	+22,000 (3)
4. Nevada and Toiyabe National Forests, Nevada	- -	- -	10,000	+10,000 (4)
5. Ozark and Ouachita National Forests, in Arkansas	- -	- -	250,000	+250,000 (5)
6. Angeles National Forest, California	- -	- -	20,000	+20,000 (6)
7. Cleveland National Forest in San Diego County, California	- -	- -	5,000	+5,000 (7)

(Continued on next page)

Project	1945	1946	1947 (estimated)	Increase
8. Sequoia National Forest, California	--	--	35,000	+35,000 (8)
Total estimate or appropriation	--	--	392,000	+392,000

INCREASES

An increase of $392,000 for 1947, to acquire privately owned lands which should receive a greater degree of protection, administration or rehabilitation to preserve or enhance their watershed functions and to prevent or ameliorate soil erosion and flood conditions thereon or arising therefrom, and consisting of the following:

(1) An increase of $40,000 to resume acquisition of lands within the exterior boundaries of the Uinta and Wasatch National Forests to facilitate control of soil erosion and flood damage.

The Problem and its Significance: The areas in which purchases have been and are to be made are parts of watersheds upon which numerous communities and irrigation projects are vitally dependent. Certain parts of such watersheds are subject to exceptionally severe flood damage and soil erosion, when and where the protective forest and brush cover has been removed. Restoration of such cover is therefore a matter of most urgent necessity. Purchases hitherto made within these forests under the provisions of the Act of August 26, 1935, aggregate 82,243 acres at a total cost of $241,342. The lands remaining to be purchased will cost somewhat more than the average prices hitherto paid. The acreage remaining to be acquired is not readily determinable, since it depends on the care with which the owners of the private lands use and manage their properties. In the light of present information, the expectation is that to meet all requirements of public interest it will be necessary to purchase about 68,000 additional acres.

(2) An increase of $10,000 to resume acquisition of lands within the exterior boundary of the Cache National Forest to facilitate control of soil erosion and flood damage.

The Problem and its Significance: The economy of Northern Utah is primarily one of agriculture; all lands suitable for tillage being rather intensively utilized for farm crop production. The agriculture of the region is almost wholly dependent upon artificial irrigation. In relation to the need, the water resources are relatively limited, making their careful conservation and use a matter of vital necessity to the dependent communities, the counties, and the State.

The Cache National Forest as initially established more than a quarter centruy ago by reservation of part of the public domain embraced parts of the important watersheds but by no means the most vital parts. Due to long continued and extensive use of the timber and forage resources and lack of organized effort to prevent forest fires, much of the land formerly outside of the National Forest has been depleted of its original forest and vegetative cover. The water conservation potentiality of the soil, therefore, has been greatly reduced and the less stable soils are subject to serious erosion, frequently occurring in the form of mud flows or landslides which have caused serious damage to life and property and public utilities.

The primary value of the land is for grazing and timber production, and as a source of water supply but under proper management it would also be of high social value for recreational use, protection of wildlife resources, etc.

Enlargement of the boundaries of the Forest in Utah has included therein areas of vital importance to watershed protection. The lands thus added constitute widely isolated islands of Federal ownership mingled with larger acreages in private ownership and upon which there has been no constructive control. The inclusion of the lands within National Forest will not accomplish the desired purposes nor permit the attainment of the objective of minimization of soil erosion and flood control, and the conservation of water unless some means is established by which the intermingled private lands progressively can be under public management.

There have been purchased 7,404 acres at a cost of $20,000, and it is estimated that 122,000 additional acres should be acquired if the objectives of the national forest are to be achieved. Nearly 13,000 acres have heretofore been donated and continued interest of local governments and citizens indicate that additional donations will be received. A substantial part of the remaining area, however, will necessarily have to be purchased.

(3) <u>An increase of $22,000 to resume the acquisition program within the exterior boundaries of the San Bernardino and Cleveland National Forests to facilitate control of soil erosion and flood damage.</u>

<u>The Problem and its Significance:</u> The lands within the San Bernardino National Forest and the Cleveland National Forest in Riverside County comprise watersheds from which are derived the waters used to irrigate a large acreage of land intensively cultivated for the production of citrus fruits and other crops of immense value. Centers of population in the City of Riverside and neighboring cities as well as numerous water districts are dependent upon this water.

The National Forest lands bear a vital relationship to this culture in two important respects, first, as a source of supply of water upon which it is dependent; second, as a source of destructive influences in cases where protective cover is destroyed, giving free play to the forces of floods and erosion. The soils within the San Bernardino National Forest and the Cleveland National Forest in Riverside County are subject to destructive erosion. The slopes are steep, and when the torrential rains come destructive floods are bound to occur on areas from which the vegetative cover has for one cause or another been removed. Many serious floods causing immense loss of life and damage to property have occurred on similar areas burned over and before the vegetative cover has been re-established.

Public control of all lands within the National Forests in Riverside County which are more valuable for National Forest purposes than for other purposes is essential, to eliminate existing hazardous and destructive conditions, to assure that they will not be abused or so used as to constitute a hazard to surrounding public lands, to permit rehabilitation where necessary, and to decrease the cost of administration of lands now in Government ownership.

It is indicated that there are approximately 82,000 acres within this project intermingled with the 242,000 acres of now national forest land which should be acquired in the public interest at an estimated cost of $322,000. These figures are subject to change as protection and management under private ownership meets or fails to meet the requirements of public welfare. None of such lands have yet been acquired.

(4) An increase of $10,000 to resume acquisition of lands within the exterior boundaries of the Nevada and Toiyabe National Forests to facilitate control of soil erosion and flood damage.

The Problem and its Significance; Within these national forests and intermingled with existing public lands are 67,000 acres of privately-owned lands largely appropriated prior to creation of the forest under the public land laws, primarily to control large tributary areas of public lands through ownership of sources of range water, rights-of-way and similar key facilities. Of this acreage, it is estimated that some 54,000 acres should be publicly owned to prevent overgrazing or other uses inimical to the public welfare and contrary to the purposes for which the surrounding public lands are reserved and managed, and to facilitate the management of the National Forest as a whole by eliminating scattered tracts of non-public lands. Private ownership of such land makes it difficult to most effectively use or equitably allot the use of forage and other natural resources and overgrazing or other mis-use acts to nullify progressive measures for control of erosion undertaken on adjacent public lands at public expense. Some 6,843 acres of lands have been acquired under this act at an average cost of $4.03 per acre.

(5) An increase of $250,000 to resume acquisition of lands within the exterior boundaries of the Ozark and Ouachita National Forests to facilitate control of soil erosion and flood damage.

The Problem and its Significance: To fully achieve the objectives of these national forests and to assure that mis-use of lands which leads to excessive erosion, loss of absorption capacity of the soil and hence to floods and flood damage will be minimized and eventually eliminated, purchase of about 890,000 acres of privately-owned lands at a cost of approximately 4 million dollars appears essential. These lands are intermingled with the 2,092,000 acres of existing national forest and are subject to destructive logging, overgrazing and unwise cultivation, thus detracting from the benefits of or entirely nullifying affirmative management practices or rehabilitation measures on the public lands.

These two national forests form parts of the drainages of important tributaries of the Mississippi River which are reported to contribute more than their proportionate quota to floods and sedimentation of the lower Mississippi. Unified management of this watershed area would increase the effectiveness and reduce the cost of watershed protection as well as facilitate development of resources important to local economies.

(6) An increase of $20,000 to resume the acquisition program within the exterior boundary of the Angeles National Forests to facilitate control of soil erosion and flood damage.

The Problem and its Significance: The problem is to acquire and so remove from unrestricted and unregulated use some 28,000 acres of privately-owned land intermingled with the present 643,871 acres of national forests. Such lands if used for cabin sites, hillside farms or like purposes are very real sources of forest fires; if attempts are made at cultivation extreme erosion may result; roads built to them may be the source of soil erosion of serious consequence. Closure orders or other measures affecting public lands during acute fire danger conditions cannot be made applicable to such areas and hence are rendered to some extent ineffective. Lands within this National Forest are part of the watershed from which water used to irrigate large acreages of intensively cultivated agricultural land is derived. Productiveness of such lands is governed materially by the water supply from these forest lands. There are many highly developed communities within close proximity to the Angeles National Forest, and this Forest has a vital relationship to surrounding lands and the inhabitants of nearby communities, first as a source of water supply and, second, as source of destructive floods and erosion where protective cover is destroyed. Within the forests slopes are steep, soils erosible, and the vegetative cover extremely inflammable during the fire season. Severe and damaging floods have resulted from fires followed by heavy rains.

(7) An increase of $5,000 to resume the acquisition program within the exterior boundary of the Cleveland National Forest in San Diego County, California, to facilitate control of soil erosion and flood damage.

The Problem and its Significance: There are some 91,000 acres intermingled with public lands within this portion of the aforesaid National Forest which should eventually be publicly owned to assure proper management and protection. The immediate problem, however, is to acquire those key tracts which have an important bearing on the watershed functions of this Forest and which should be publicly owned to assure against use which is causing or might later cause erosion and excessive run-off, constitute a fire hazard or which unduly interfere with protective measures necessary to conserve the national forest. It is estimated that there should be acquired as rapidly as possible some 5,272 acres at an estimated cost of $55,000.

The Cleveland National Forest was created primarily to maintain favorable conditions of stream flow. Throughout the area the preservation of the natural cover of the mountain slopes has long been recognized and proved to be the only effective way to check rapid run-off of water. Serious flood damage has resulted to the communities in the valleys watered by the streams from the National Forests, and the only practical method of reducing these flood conditions is to restore or maintain the natural cover on the mountain slopes which will greatly aid in absorbing the rainfall.

(8) An increase of $35,000 to resume acquisition of lands within the exterior boundary of the Sequoia National Forest to facilitate control of soil erosion and flood damage.

The Problem and its Significance: Intermingled with 1,114,932 acres of existing national forest lands within this forest are 67,657 acres of privately-owned land of which 41,000 acres, more or less, should be brought into public ownership to prevent destructive use or to permit rehabilitation. The lands which comprise this latter acreage are largely key meadows, abandoned homesteads or strategically located tracts of timber land. The two classes first mentioned are being or are subject to overgrazing or to unwise and uneconomic cultivation and the timber lands are subject to unrestricted and destructive cutting. Such use not only results in abuse of the tracts themselves but to some extent defeats the constructive conservation measures enforced upon surrounding public lands. The Sequoia National Forest embraces the upper reaches of the Kern River and other streams of decided importance to agriculture in the valleys below it, so that maintenance of favorable conditions of stream flow is of substantial economic importance.

General: All lands purchased under this appropriation will be acquired only after field examination and appraisal, and approval by the National Forest Reservation Commission in accordance with established procedures for acquisition of lands in national forests.

CHANGE IN LANGUAGE

The estimates include the following new language to reinstate the special land acquisition programs on designated national forests:

> For the acquisition of land to facilitate the control of soil erosion and flood damage originating within the exterior boundaries of the following national forests, in accordance with the provisions of the following Acts authorizing annual appropriations of forest receipts for such purposes, and in not to exceed the following amounts from such receipts: Uinta and Wasatch National Forests, Utah, Act of August 26, 1935, Public Law 337, as amended, $40,000; Cache National Forest, Utah, Act of May 11, 1938, Public Law 505, as amended, $10,000; San Bernardino and Cleveland National Forests, Riverside County, California, Act of June 15, 1938, Public Law 634, as amended, $22,000; Nevada and Toiyabe National Forests, Nevada, Act of June 25, 1938, Public Law 748, as amended, $10,000; Ozark and Ouachita National Forests, Arkansas, Act of March 5, 1940, Public Law 427, $250,000; Angeles National Forest, California, Act of June 11, 1940, Public Law 591, $20,000; Cleveland National Forest, San Diego County, California, Act of June 11, 1940, Public Law 589, $5,000; Sequoia National Forest, California, Act of June 17, 1940, Public Law 637, $35,000; in all, $392,000.

The above language is patterned after the appropriation item for the fiscal year 1943 - the last year for which an appropriation was made from forest receipts, [illegible] The above appropriation item provides for the acquisition of lands on the same national forests as in 1943.

(m) Conservation and Use of Agricultural Land Resources (Allotment to Forest Service)

This budget schedule covers obligations under an allotment for general administration of the Naval Stores Conservation Program of the Production and Marketing Administration.

(n) Local Administration, Section 388, Agricultural Adjustment Act of 1938 (Allotment to Forest Service)

This budget schedule covers obligations under an allotment for local administrative expenses of the Naval Stores Conservation Program of the Production and Marketing Administration. (See item (m) above.)

(o) White Pine Blister Rust Control (Forest Service)

This budget schedule covers obligations for blister rust control work on the National Forests. A discussion of the work is contained elsewhere in the Explanatory Notes for the item "White Pine Blister Rust Control".

(p) Flood Control, General (Transfer to Agriculture) (Allotment to Forest Service)

This budget schedule covers obligations under funds transferred from the War Department for preliminary examinations and surveys and for works of improvements on the headwaters of streams, including upstream engineering, soil stabilization and reforestation on selected watersheds authorized by various Flood Control Acts.

(q) Working Funds (Forest Service)

This budget schedule covers obligations under advances to the Forest Service, pursuant to Section 601 of the Economy Act of June 30, 1932, for services performed for various agencies as indicated in the statement of obligations under supplemental funds located elsewhere in these Explanatory Notes.

SPECIAL ACCOUNTS

(r) Payments to States and Territories from the National Forest Fund

Appropriation Act, 1946 (revised)	$4,001,000
Budget estimate, 1947	3,900,000
Decrease	101,000

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
Payments to states and territories from national forest funds (total estimate or appropriation)	$4,005,438	$4,001,000	$3,900,000	-$101,000

DECREASE

The decrease of $101,000 in this item is due to the inclusion in the 1947 Budget of an appropriation of $392,000 for the acquisition of lands from National Forest receipts. Under the terms of the basic legislation for the above acquisition item, 25 percent of the receipts from the forests enumerated in the appropriation language therefore will be used in 1947 for the purchase of land instead of being paid to the states in which those forests are located.

WORK UNDER THIS APPROPRIATION

Except as otherwise provided, the Acts of May 23, 1908, and March 1, 1911, as amended by the Act of June 30, 1914, require that 25 percent of all money received from the national forests during any fiscal year be paid to the states and territories in which the forests are located. The amount of this appropriation varies each year in direct proportion to national forest receipts during the previous fiscal year.

(s) Payments to School Funds, Arizona, and New Mexico, National Forest Fund

Appropriation Act, 1946 (revised)	$40,000
Budget estimate, 1946	40,000

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)
Payments to school funds, Arizona and New Mexico, national forest fund (total estimate or appropriation)	$38,476	$40,000	$40,000

The States of Arizona and New Mexico are reimbursed in such proportion of the gross proceeds of all the National Forests within those States as the area of land granted to the states for school purposes within the National Forests bears to the total area of all national forests within the States.

These payments are required by the Act of June 20, 1910 (36 Stat. 562 and 573) which provides "That the grants of Sections two, sixteen, thirty-two and thirty-six to said State, within National Forests now existing or proclaimed, shall not vest the title to said section in said State . . . but said granted sections shall be administered as a part of said forests, and at the close of each fiscal year there shall be paid to the Secretary of State, as income for its common-school fund, such proportion of the gross proceeds of all the national forests within said state as the area of lands hereby granted to said State for school purposes which are situated within said forest reserves . . . may bear to the total area of all the National Forests within said State . . . the amount necessary for such payments being appropriated and made available annually from any money in the Treasury not otherwise appropriated." School lands are given the same form of management accorded adjacent national forest lands.

As soon after the close of the fiscal year as the receipts from national forests, and the area of school lands in the States of Arizona and New Mexico are authoritatively determined, the payments referred to above are made to the States. Payments in fiscal year 1945 were $38,061 to Arizona and $415 to New Mexico.

(t) Roads and Trails for States, National Forest Fund

Appropriation Act, 1946 (revised)	$1,600,000
Budget estimate, 1947	1,560,000
Decrease	40,000

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Decrease
Roads and trails for States, National Forest fund	$1,380,344	$1,600,000	$1,560,000	-$40,000
Covered into Treasury as miscellaneous receipts, Public Law 529	170	- -	- -	- -
Total	1,380,514	1,600,000	1,560,000	-40,000
Prior year balance available in 1945	-1,305,340	- -	- -	
1945 balance available in 1946	+1,527,001	-1,527,001	- -	
1946 balance available in 1947	- -	+1,527,001	-1,527,001	
1947 balance available in 1948	- -	- -	+1,527,001	
Total estimate or appropriation	1,602,175	1,600,000	1,560,000	

DECREASE

The decrease of $40,000 in this item is due to the inclusion in the 1947 Budget of an appropriation of $392,000 for the acquisition of lands from National Forest receipts. Under the terms of the basic legislation for the above acquisition item, 10 percent of the receipts from the forests enumerated in the appropriation language therefor will be used in 1947 for the purchase of land instead of being allotted to the Forest Service for the construction and maintenance of roads and trails.

WORK UNDER THIS APPROPRIATION

An additional 10 percent of moneys received from the National Forests during each fiscal year is available at the end thereof to be expended by the Secretary of Agriculture for the construction and maintenance of roads and trails within the national forest in the states from which such proceeds are derived (16 U.S.C. 50).

(u) Cooperative Work, Forest Service
(Trust Fund)

Appropriation Act, 1946	$2,000,000
Budget estimate, 1947	2,000,000

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Decrease
1. Construction of improvements	$287,141	$323,000	$323,000	- -
2. Maintenance of improvements	305,204	342,000	342,000	- -
3. Prevention and suppression of forest fires	523,270	589,000	589,000	- -
4. Disposal of brush and other debris in timber-sale operations	752,532	991,513	991,513	- -
5. Forest investigations	156,160	176,000	176,000	- -
6. Administration	55,040	61,500	61,500	- -
7. Reforestation	4,230	4,900	4,900	- -
8. Refunds to cooperators	39,288	26,000	26,000	- -
9. Overtime pay	315,728	59,291	- -	-$59,291
Total available	2,438,593	2,573,204	2,513,913	-59,291
Prior year funds available in 1945	-2,936,698	- -	- -	
1945 funds available in 1946 .	+3,904,173	-3,904,173	- -	
1946 funds available in 1947 .	- -	+3,330,969	-3,330,969	
1947 funds available in 1948 .	- -	- -	+2,817,056	
Total estimate or appropriation	3,406,068	2,000,000	2,000,000	

Contributed funds are placed in this trust account, to facilitate the accomplishment of certain projects within the list of activities shown in the project statement, which are of mutual benefit to the Forest Service and to individuals, other public or private agencies, or organizations; to provide for the equitable division of the cost of projects; and to simplify completion by concentrating the direction of the projects under one head.

Many desirable proposed projects are of potential benefit to both the Forest Service and a second party. It is in the public interest to see that the other party or parties defray their fair share of the expense of such projects. This is especially true in the case of fire prevention and suppression on private lands intermingled with national forest lands inasmuch as the Government must necessarily suppress fires on nearby lands regardless of ownership in order to protect its own property. In the case of brush disposal on national forest timber sales, this method of collecting from the operator as he cuts the timber insures the proper disposal of the debris resulting from the sale.

STATEMENT OF OBLIGATIONS UNDER SUPPLEMENTAL FUNDS
(1945 and 1946 figures include overtime costs)

Item	Obligations, 1945	Estimated obligations, 1946	Estimated obligations, 1947
Conservation and Use of Agricultural Land Resources: Cooperation with Production and Marketing Administration in administration of the naval stores conservation program	$30,868	$17,592	$17,320
Local Administration, Section 388, Agricultural Adjustment Act of 1938: Cooperation with Production and Marketing Administration in administration of the naval stores conservation program	129,115	99,500	97,586
White Pine Blister Rust Control: For blister rust control on national forests	1,201,979	1,392,350	2,599,471
Flood Control, General: Preliminary examinations and surveys, and works of improvement, etc., watersheds authorized by Flood Control Acts	166,455	510,147	1,340,200
Working Funds (Forest Service):			
Advances from:			
War Department:			
Air Defense Command, for winterizing and operating observation stations	5,757	- -	- -
Army Air Forces, for strength studies of wood, plywood, and glues for use in aircraft (joint project with Navy)	62,047	69,025	- -
Army Air Forces, for general research and development program, plastics, glue evaluation, seasoning, etc. for aircraft	15,904	14,775	- -

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Item	Obligations, 1945	Estimated obligations, 1946	Estimated obligations, 1947
Working Funds (Forest Service)			
Advances from: (Contd.):			
War Department:			
Engineer Corps, for mapping strategic areas	- -	$10,000	- -
Army Air Forces, Preparation of packaging inspection manuel	$9,675	325	- -
Ordnance Department, for solving packaging and container problems, and for instruction courses in container construction and packaging	514,769	183,595	- -
Army Air Forces, for solving packaging and container problems	217,460	230,796	- -
Army Air Forces, Air Service Command, for instruction courses on container construction and packaging	51,997	29,834	- -
Army Air Forces, Material Command, for instruction courses for inspectors of air-craft wood, and instruction in container design	3,348	- -	- -
Engineer Corps, for protection of maneuver area West Virginia	28,151	1,917	- -
Engineer Corps, for protection of Hunter-Liggett military reservation, California	100,818	44,163	- -
Army Air Forces, for certification of facilities for kiln drying or aircraft lumber	28,908	- -	- -
Ordnance Department, for development of non-metallic land mines	46,606	- -	- -
Signal Corps, for development of containers and packaging of communications equipment and parts	5,260	9,740	- -
Total, War Department	1,090,700	594,170	- -

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Item	Obligations, 1945	Estimated obligations, 1946	Estimated obligations, 1947
Working Funds (Forest Service)			
Advances from (Contd.):			
Navy Department:			
Bureau of Aeronautics for strength studies of wood, plywood, and glues in aircraft (joint project with Army)	$61,995	$69,025	- -
Bureau of Aeronautics, for text book on kiln certification	4,992	- -	- -
Bureau of Aeronautics, for investigation of fibrous materials for sandwich construction	4,772	9,728	- -
Bureau of Supplies and Accounts, for instruction courses on export packaging for Navy personnel	20,183	9,817	- -
Bureau of Ships, for studies relating to the use of wood in boats, including laminated construction, fireproofing, preservation, etc	60,973	29,000	- -
Bureau of Ordnance and Stores, for development of plastic cartridge cases ..	7,407	9,000	- -
Hydrographic Office, for mapping strategic areas ..	205,648	290,352	- -
Bureau of Aeronautics, for research in cargo flooring in naval aircraft	10,000	- -	- -
Bureau of Aeronautics for research on fibrication of materials for high-speed naval aircraft	- -	10,000	- -
Total, Navy Department .	375,970	426,922	- -
National Advisory Committee on Aeronautics:			
Study of stress concentrations in monestropic materials	637	14,363	- -

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Item	Obligations, 1945	Estimated obligations, 1946	Estimated obligations, 1947
Working Funds (Forest Service) Advance from (Contd.):			
Interior Department:			
National Park Service, construction of a road from Las Vegas, Nevada, to Three Kids Mine	$77	- -	- -
For protection of Oregon and California R.R. and reconveyed Coos Bay Wagon Road grant lands located within the boundaries of national forests	13,451	11,785	- -
Relocation of Forest Service facilities on lands subject to flooding from Shasta Dam California ...	1,085	28,328	- -
Reconstruction of Forest Service telephone lines to eliminate power interference caused by Bonneville project	545	5,278	- -
To cover cost of moving Forest Ranger Station, Boise, Idaho	- -	10,748	- -
For survey and study of future development in the Columbia River Basin	- -	15,000	- -
Total, Interior Department	15,158	71,139	- -
Federal Works Agency:			
Public Roads Administration for investigation of applications, and construction, maintenance, and improvement of access roads to sources of raw materials	1,206,297	287,003	- -
Public Buildings Administration, for guard service for building occupied by war mapping project	147	- -	- -
Total, Federal Works Agency	1,206,444	287,003	- -

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Item	Obligations, 1945	Estimated obligations, 1946	Estimated obligations, 1947
Working Funds (Forest Service)			
Advances from (Contd.):			
Federal Power Commission:			
For investigation and supervision of Federal Power Commission projects	$878	$960	- -
Department of Commerce:			
Bureau of Census, for collection of forest products data	9,838	32,641	- -
Office for Emergency Management:			
For use of the facilities in Alaska to provide fiscal, personnel, and procurement services	15,675	306	- -
Office of Price Administration:			
For use of the facilities in Alaska to provide fiscal, personnel and procurement services	- -	9,130	- -
War Manpower Commission:			
For use of the facilities in Alaska to provide fiscal, personnel, and procurement services	850	4,267	- -
United States Employment Service:			
For use of the facilities in Alaska to provide fiscal, personnel and procurement services	- -	1,610	- -
Coordinator of Inter-American Affairs:			
For assistance in survey of forest resources in other American republics	1,637	69	- -
Office of Scientific Research and Development:			
For photostating secret documents	35,439	21,825	- -

(Continued on next page)

Item	Obligations, 1945	Estimated obligations, 1946	Estimated obligations, 1947
Working Funds (Forest Service)			
Advances from (Contd.):			
Foreign Economic Administration:			
For survey of cinchona resources of Colombia	$369	- -	- -
War Production Board:			
Lumber Division, for stimulating the production of forest products needed in the war effort	1,284,093	$593,163	- -
Lumber and Lumber Products Division, for gathering and furnishing information on the production, requirements and supplies of forest products	312,611	204,987	- -
Office of Production Research and Development, for a pilot plant study of laminating ship timbers, and structural timbers, design of furnace-type dry kiln, water repellents, etc.	137,643	10,574	- -
Office of Production Research and Development, for a pilot plant study of the Scholler process for the production of wood sugar and its conversion to ethyl alcohol ..	31,057	- -	- -
Total, War Production Board	1,765,404	808,724	- -
Selective Service System:			
For Operating Civilian Public Service Camps	327,839	260,127	- -
Farm Security Administration:			
For payments in lieu of taxes and for insurance of Government property on Sublimity, Ky., and Drummond, Wisc., rural rehabilitation projects	4,896	1,862	
Commodity Credit Corporation:			
To cover costs incident to conducting tests on egg cases	26,942	59	- -
Total, Working Funds	4,878,676	2,535,177	- -

(Continued on next page)

Item	Obligations, 1945	Estimated obligations, 1946	Estimated obligations, 1947
Cooperative Work (Trust Fund):			
Cooperative work in forest investigations, or the protection and improvement of the national forests	$2,438,593	$2,573,204	$2,000,000
TOTAL, OBLIGATIONS UNDER SUPPLEMENTAL FUNDS	8,845,686	7,127,970	6,054,577

PASSENGER-CARRYING VEHICLES

Replacements: The breakdown by age classes of the 707 cars on hand at the end of 1946 will be as follows:

Less than one year old (F.Y. 1946 purchases)	145
Between 2 and 3 years old (F.Y. 1944 and 1945 purchases made in spring of 1944)	157
Between 5 and 6 years old (F.Y. 1941 purchases)	99
Between 6 and 7 years old (F.Y. 1940 purchases)	108
More than 7 years old	198
	707

It is proposed to replace the 198 cars which will be more than 7 years old on June 30, 1946. The average mileage of these cars will be in excess of 70,000 miles, with some units in excess of 100,000 miles. These vehicles have been operated under practically all conditions of use but a large portion of the mileage has been over rough mountain roads. Many of these cars are being kept in operation now only through the expenditure of excessive amounts for maintenance and repair.

Additional vehicles: The 95 additional passenger cars included in the estimates for 1947 are discussed below under applicable appropriation headings:

National Forest Protection and Management: The two additional cars to be purchased from this appropriation are for the use of staff assistants in Regional offices and on forests engaged in reforestation activities.

Forest and Range Management Investigations: The 12 new cars included in the estimates will be assigned to experimental forests and ranges. Transportation by car is essential on these areas because of the large size of the territory served by these units, the wide distribution of sample plots, and the fact that a large percentage of the time of the personnel assigned to these areas will be spent in the field.

Forest Resources Investigations: The 50 cars included in the estimates will be used by survey crews engaged in gathering field data for the comprehensive forest survey. Passenger cars are superior to pick-up trucks on this activity because, (1) official and personal equipment can be locked up while cars are parked along roads during the time crews are working in nearby forested areas, and (2) extra seating capacity is needed for transporting State and private cooperators on field studies.

Acquisition of Lands: The 31 cars included in the estimates will be used by land appraisers, surveyors, and others engaged in land purchase activities under the new appropriations.

Aircraft: Aerial transportation of firefighters, "smoke jumpers", supplies and equipment to back country fires and fire control stations has proven itself during the war years. In 1947 it may be desirable to purchase four additional aircraft for transportation of men and supplies for fire control purposes.

PENALTY MAIL ESTIMATE
Section 2, Public Law 364, 78th Congress
(Allotment to Forest Service)

	1945	1946	1947	Increase (+) 1947 over 1946
Category 1	$ 4,871	$ 5,000	$ 5,000	--
Category 2	20,698	29,000	35,000	+$6,000
Total	$25,569	$34,000	$40,000	+$6,000

Category 1 consists of material mailed in response to specific requests for processed material or in reply to specific problems that have been raised, thus facilitating prompt replies and reducing the number of individual letters which would otherwise be necessary. The material distributed contains the results of Forest Service research work and information of the availability of stumpage, planting methods, range for domestic livestock, revegetation of depleted ranges, timber marketing, opportunities for rental or acquisition of forest lands, etc., and is made up of farmers' bulletins and leaflets, technical and research notes, map folders, printed fire control precautionary measures, and other duplicated statements for which experience has indicated a steady demand.

Category 2 consists of administrative and operational mailings involving the business of the Forest Service which is decentralized to 755 ranger district offices, 135 supervisor offices, 10 regional offices, 13 research stations, 25 nurseries and 81 research substations, and over 100,000 timber sale, grazing, and special use permittees.

The increase of $6,000 for 1947 is needed to meet the cost of increased mailings resulting from the appropriation increases included in the 1947 Budget Estimates which will involve additional administrative and operational mailings of such material as purchase orders, time records, vouchers, reports, and related correspondence.

FOREST ROADS AND TRAILS

Appropriation Act, 1946		$5,918,778
First Deficiency Appropriation Act, 1946 ($2,000,000 for forest highways and $2,000,000 for forest development roads and trails)		4,000,000
Anticipated supplemental for additional costs due to the Federal Employees Pay Act of 1945		480,000
Total anticipated available, 1946		10,398,778
Budget estimate, 1947		36,214,222
Change for 1947:		
Overtime decrease	-97,845	
Increase	+25,913,289	25,815,444

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
1. Forest highways	$ 68,253	$ 3,500,000	$23,714,222	+$20,214,222(1
2. Forest road development	3,884,324	6,800,933	12,500,000	5,699,067(2
3. Overtime pay	566,002	97,845	- -	-97,845
Covered into Treasury as miscellaneous receipts, Public Law 529	310	- -	- -	
Total obligations	4,518,889	10,398,778	36,214,222	+ 25,815,444
Net adjustments	-357,393	- -	- -	
Anticipated supplemental	- -	-480,000	- -	
Total estimate or appropriation	4,161,496	9,918,778	36,214,222	

INCREASES OR DECREASES

The net increase of $25,815,444 in this item for 1947 consists of the $97,845 decrease for overtime and the following:

(1) An increase of $20,214,222 under the project "Forest highways" for construction and improvement of Forest highways.

Objective: To improve the highest priority five percent of the remaining uncompleted portion of the Forest Highway System.

The Problem and its Significance: During the war, regular construction work on the Forest Highway System was discontinued, with the result that projects which were urgently needed and scheduled for construction early in 1942 have been postponed. Other projects which were scheduled for reconstruction or improvement during 1943 and 1944 have been deteriorating through normal wear and tear, accentuated in many instances by unprecedented heavy truck traffic in connection with production and transportation of military and other war materials.

Forest Highways constitute connecting links on state, county and community road systems. It is, therefore, important that funds be made available to finance a Forest Highway improvement program which will make up for the lag during the war, and keep pace with progress made on the connecting road systems. Forest Highways were rather generally below the standard of connecting roads before the war started, and thus their improvement is of relatively high urgency.

Plan of Work: The increase will be used for construction work on approximately 469 miles of highways in 40 States, Alaska, and Puerto Rico. The construction and maintenance work on Forest Highway projects is generally supervised by the Public Roads Administration.

Maintenance of Forest Highways is generally taken over by the States or Counties after two years following the completion of construction. Maintenance by the Federal Government during the two-year post-construction period averages about $500 per mile annually and will be done in Fiscal Year 1947 on about 600 miles at an estimated cost of $300,000.

Construction work will consist of betterment and construction of projects in Puerto Rico, Alaska, and the 40 States in which national forests are located. Practically all projects will be done by the contract method.

The present status of the Forest Highway System is:

	Per-cent	Miles	Est. Cost per mile to Complete	Estimated cost to Complete
Satisfactory Standard	49	11,853	$ - -	$ - -
Unsatisfactory Standard	47	11,578	38,100	440,700,000
Non-existing	4	923	56,600	52,300,000
Total Requirements	100	24,354	$	493,000,000

The estimate for Fiscal Year 1947 will finance roughly 5 percent of the uncompleted program.

Of the total appropriation of $23,714,222 about $50,000 will be used by the Forest Service for betterment and maintenance of Forest Highways in the East, and approximately $125,000 will be retained by the Forest Service for general administration. The balance of the increase will be transferred to the Public Roads Administration, nearly all of which will be obligated through contracts for construction work.

Summary of financial requirements:

Maintenance 600 miles at $500	$ 300,000
Construction of 469 miles at $49,900	23,414,222
1947 estimate	23,714,222

(2) An increase of $5,699,067 under the project "Forest road development" for construction and betterment of Forest Development Roads and Trails.

Objective: To construct or improve the highest priority one and one-half percent of the uncompleted portion of the Forest Development Road and Trail Systems, and to maintain the existing system.

The Problem and its Significance: A systematic study of the transportation facilities, required for the proper protection, administration, and utilization of National Forest resources shows that an expenditure of approximately $435,000,000 is required to complete the necessary transportation system.

During the war, work on the Forest Development Road and Trail System was confined to maintenance, with the exception of a limited amount of improvement to reach strategic materials which was financed with another appropriation. The wartime demand for timber resulted in accelerated depletion of readily accessible stands. Much of the National Forest timber which should be cut in the near future is in small blocks in back country and is more suitable for logging by smaller operators. The demands for timber will remain at a high level for several years. It is essential for orderly harvesting of National Forest timber that these inaccessible stands be opened up through Federal road construction. All of the increase will be used for this purpose.

Plan of Work: The methods and procedures for the work are well established. It is planned that approximately $5,500,000 of the total of $12,500,000 will be expended on the maintenance of the existing facilities, and the balance of the appropriation for construction and betterment of the highest priority projects.

The status of the Forest Development System is:

	Percent	Miles	Miles per Square Mile Gross Area	Estimated Cost per Mile to Complete	Estimated Cost to Complete
DEVELOPMENT ROADS					
Satisfactory Standard	43	58,919	0.17	- -	- -
Unsatisfactory Standard	30	40,292	0.11	3,004	$121,024,000
Non-existing	27	36,872	0.10	8,000	294,976,000
Total required	100	136,083	0.38		416,000,000

(Continued on next page)

	Per-cent	Miles	Miles per Sq. Mi. Gross Area	Est. Cost per Mile to Complete	Estimated Cost to Complete
TRAILS					
Satisfactory Standard	60	100,354	0.28	- -	- -
Unsatisfactory Standard	27	46,200	0.13	172	$7,940,000
Non-existing	13	22,120	0.06	500	11,060,000
Total Required	100	168,674	0.47		19,000,000

Total for Development Roads and Trails $435,000,000

The proposed appropriation of $12,500,000 will be used as follows:

Maintenance

Roads 87,000 miles at $45	$3,915,000	
Trails 128,000 miles at $7.50	960,000	
Bridge Maintenance & Replacement	625,000	
Total Maintenance		$5,500,000

(The maintenance of 12,211 miles of roa ds and 18,554 miles of trails will either be performed by Counties, or postponed during F.Y. 1947.)

Construction and Betterment

Roads 1,120 miles at $6,000	$6,720,000	
Trails 700 miles at $400	280,000	
Total Construction and Betterment		$7,000,000
1947 estimate		12,500,000

CHANGES IN LANGUAGE

The estimates include proposed changes in the language of this item as follows (new language underscored, deleted matter enclosed with brackets):

Change No. For ca

For carrying out the provisions of section 23 of the Federal Highway Act approved November 9, 1921, as amended (23 U.S.C. 23, 23a), and for the construction, reconstruction, and maintenance of roads and trails on experimental areas under
1 Forest Service administration, (1) [$4,418,778] $12,500,000 for forest development roads and trails, which sum is authorized to be appropriated by the Act of December 20, 1944 (Public Law 521) [(including not to exceed $68,846 for
2 personal services in the District of Columbia)], and (2)
3 [$1,500,000] $23,714,222 for [maintenance and reconstruc-
4 tion of] forest highways, which latter sum [is part] consists of (a) the balance of the amount [of $5,714,222] authorized
5 to be appropriated for the fiscal year 1942 and the amount authorized to be appropriated for the fiscal year 1943 by the Act of

Change No.

September 5, 1940 (54 Stat. 867, Public Law 780--Seventy-sixth
6 Congress), and (b) $14,500,000, a part of the amount authorized to be appropriated by the Act of December 20, 1944 (Public
7 Law 521) in all, [$5,918,778] $36,214,222 (including not to exceed $99,804 for personal services in the District of Columbia), to be immediately available and to remain available until expended: Provided, That this appropriation shall be available for the rental, purchase, construction, or alteration of buildings necessary for the storage and repair of equipment and supplies used for road and trail construction and maintenance, but the total cost of any such building purchased, altered, or constructed under this authorization shall not exceed $10,000 with the exception that any building erected, purchased, or acquired, the cost of which was $10,000 or more, may be improved within any fiscal year by an amount not to exceed 2 per centum of the cost of such building as
8 certified by the Secretary [, and that $10,200 may be expended for the installation of a heating plant in, and for other betterments to the Sellwood shop buildings in Portland, Oregon].

9 [Forest roads and trails: For an additional amount, fiscal year 1946, for "Forest roads and trails", including the objects and subject to the conditions specified under this head in the Department of Agriculture Appropriation Act, 1946, $4,000,000, to remain available until expended, of which amount $2,000,000 is for forest development roads and trails, being a part of the $12,500,000 authorized to be appropriated for the first postwar fiscal year by the Act of December 20, 1944 (58 Stat. 838), and $2,000,000 is for forest highways, being a part of the balance of the $7,000,000 authorized to be appropriated for the fiscal year 1942 by the Act of September 5, 1940 (54 Stat. 867).]

The first change inserts reference to the Act of December 20, 1944 which authorizes appropriations for this item.

The second change deletes the language limiting personal services in the District of Columbia. It is proposed to reinsert this language (see language change number 7) after the total appropriation for this item so that the limitation will apply to both Forest highway and Forest road development funds.

The third change deletes the words "maintenance and reconstruction of" from the language relating to Forest highways since the amount provided for 1947 in the estimates would be used principally for construction.

The fourth change deletes the words "is part" and inserts the word "consists" in order to properly relate the amount recommended for 1947 to the authorizations carried in the Acts of September 5, 1940 and December 20, 1944.

The fifth change inserts the words "and the amount authorized to be appropriated for the fiscal year 1943" in order to reflect the authority for a portion of the amount recommended for appropriation for Forest highways in 1947.

The sixth change inserts "and (b) $14,500,000, a part of the amount authorized to be appropriated by the Act of December 20, 1944 (Public Law 521)" in order to reflect the authorization for a portion of the amount recommended to be appropriated for Forest highways in 1947.

The seventh change proposes the insertion of the words "(including not to exceed $99,804 for personal services in the District of Columbia)". This represents the relocation of this language as previously discussed in connection with the second change in language.

The eighth change deletes the authority contained in the 1946 Agricultural Appropriation Act for the use of $10,200 for improvements at the Sellwood shop buildings in Portland, Oregon. It is anticipated that these improvements will be completed during the fiscal year 1946.

The ninth change deletes the language contained in the First Deficiency Appropriation Act, 1946 which appropriated an additional $4,000,000 for this item in 1946.

WORK UNDER THIS APPROPRIATION

Forest Highways

General: The Forest Highway System and the Forest Development Roads System constitute the Forest Road and Trail System - the planned transportation system for the National Forests.

Both Forest Highways and Forest Development Roads must serve the forest land and resources. The only difference is in the relative value of the service (1) to the forests and (2) to "the States, counties or communities, within, adjoining or adjacent to the National Forests". A road is designated a Forest Highway and becomes a part of the Forest Highway System when the value of the second purpose is the higher.

Forest Highways are a part of the public transportation system of the Nation as against Development Roads which, while open to public travel, are essentially "property roads".

Objective: A Forest Highway System adequately serving National Forest activities and resources and satisfying the requirements of public travel within or across the Forests.

The Problem and its Significance: The problem is to construct or improve the Forest Highways so that they will give service when and in the amount required and so that all forest sections of highways entering or crossing the forests will be as satisfactory for travel as the highways outside the forests. The System, located in Puerto Rico, Alaska, and the 40 States which contain national forests, is composed of 24,453 miles of highways.

Travel into or across the forests is far from restricted to that in connection with forest administration or the resources. A relatively large proportion consists of local travel, that is people living within or near the forest boundaries. Much of the more local travel is intercity and intercommunity. Upon it depends the social and economic welfare of many people living in or near the forests. Approximately 19 percent of the total area within the forest boundaries is privately owned. These alienated lands and other lands outside of but adjacent to the forest boundaries are used for growing timber and cordwood, stock grazing, mining, resort sites, small business establishments and in many other ways. Whether the people so engaged live in or outside the boundaries, travel on forest roads is necessary to conduct their business, to get their mail, to transport children to school, to make business or social trips, to obtain supplies and to carry the products of the land to the railroad or town and city markets. These road users expect that the roads in the forests will fully meet their needs.

The Federal Government has a definite obligation to the public to provide for adequate highway transportation necessary to the national forests and of primary importance to the States, counties, or

communities. The highway transportation system in and near national forests should for obvious reasons be advanced in step with connecting highways.

General Plan and Current Status of Program:

The present status of the Forest Highway System is:

	Per-cent	Miles	Estimated Cost Per Mile To Complete	Estimated Cost to Complete
Satisfactory Standard ..	49	11,853	- -	- -
Unsatisfactory Standard.	47	11,578	$38,100	$440,700,000
Non-existing	4	923	56,600	52,300,000
	100	24,354		493,000,000

During the war practically no progress was made toward completion of the Forest Highway System. No funds were appropriated for Forest Highways in 1945. However, balances from past appropriations were sufficient to take care of essential maintenance on about 750 miles, and the improvement of about 13 miles on a few sections where work was particularly urgent.

Forest Development Roads and Trails

General: The Forest Development Road and Trail System supplements the Forest Highway System. Together they form the National Forest Road and Trail System, i.e., the transportation system necessary for adequate service to the National Forests. Usually a Development road is a feeder to a Forest Highway but occasionally it connects directly with the "non-Forest" highway system outside the Forest boundaries. Usually the terminus of a Development foot or horse trail is a Development road, occasionally a Forest Highway and infrequently a point of the non-Forest system.

Trails are an essential part of the fire detection and suppression system. Some are also extensively used for forest administration, and recreation and occasionally for other purposes.

Objective: A transportation system of Development Roads and trails which at the lowest annual expenditure for maintenance and construction investment will fully meet all forest activity and resource needs.

The Problem and its Significance: The gross national forest area is approximately 10 percent of the entire area of the continental United States. The area is generally rough, rugged, mountainous, and remote. The forests contain about 552 billion board feet of commercial saw timber besides many other timber, land and water resources. Some

80,000,000 acres of the national forests are utilized for grazing; resulting in important production of meat, hides, and wool. Developed and undeveloped water power amounts to 11 million horsepower. Nearly four million people live in or near national forests.

General Plan: On June 30, 1945, the planned Forest Development Road System consisted of the following miles of existing and proposed truck-trails and trails:

	Truck-trails		Trails	
	Miles	Percent	Miles	Percent
Satisfactory standard ..	58,919	43	100,354	60
Unsatisfactory standard.	40,292	30	46,200	27
Non-existing	36,872	27	22,120	13
Total	136,083	100	168,674	100

Progress in Fiscal Year 1945

In the fiscal year 1945 the program was confined almost entirely to maintenance. The work consisted of maintaining 78,576 miles of forest roads and about 129,000 miles of trails. The total existing system includes 99,211 miles of development roads and 146,554 miles of trails. The smaller number of miles maintained is accounted for by the maintenance by counties of about 12,000 miles of forest roads and by the fact that not every mile of trail is maintained every year. The road maintenance included some surface replacement on about 770 miles at a cost of approximately $275,000. This surfacing was primarily the repair of relatively short sections and does not represent all of the surface replacement that would ordinarily be done. Surface maintenance that could be postponed without loss of investment was delayed for accomplishment after the war.

Considerable progress was made in the maintenance and replacement of old timber bridges. While much remains to be done, the approximately $776,000 expended on bridges during the fiscal year 1945 was sufficient to take care of most urgent requirements and to maintain the structures in a safe condition.

Some progress was made toward completion of the transportation plan to determine the network of roads, trails and landing fields which at least annual cost will adequately and economically serve the traffic necessary for protection, development, management and utilization of national forest lands and resources as well as carry the traffic serving agricultural lands, industrial establishments and communities located within and near the national forests. It is estimated that the planning was about 85 percent completed at the end of the fiscal year 1945.

PASSENGER-CARRYING VEHICLES

Replacements. It is proposed to replace one 7 year old car which has been operated over rough mountain roads. The mileage reading will be in excess of 70,000 miles by July 1, 1946.

Additions. It is proposed to purchase eight new vehicles for the use of engineering personnel engaged on the expanded road construction program. One car will be assigned to each of eight regions.

EMERGENCY RUBBER PROJECT

Appropriation Act, 1946 (1942 and 1943 balances reappropriated)		$4,253,662
1945 balances estimated to be available in 1946 (as shown in 1946 Budget schedule)		563,338
Total estimated for obligation, 1946		4,817,000
Additional 1945 balance available in 1946		961,790
Total balances, 1946		5,778,790
Deduct:		
1946 balance to be obligated in 1947	250,000	
Amount carried for rescission in H. R. 4407 (Budgetary reserve)	1,649,790	-1,899,790
Balance available, 1946		3,879,000
Estimated obligations, 1947 (Balance carried forward from 1946)		250,000
Change for 1947:		
Overtime decrease	-22,186	
Other decrease ...	-3,606,814	-3,629,000

CONSOLIDATED PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
1. Guayule	$4,237,870	$3,856,814	$250,000	-$3,606,814
2. Cryptostegia	37,066	- -	- -	- -
3. Overtime pay	188,939	22,186	- -	-22,186
Covered into Treasury as miscellaneous receipts, Public Law 529	918	- -	- -	- -
Total available	4,464,793	3,879,000	250,000	-3,629,000 (1)
Reappropriation of prior year balances in 1946 .	- -	-4,253,662	- -	
1943 balance reappropriated in 1945	-3,020,985	- -	- -	
1944 balance available in 1945	-2,968,936	- -	- -	
1945 balance available in 1946	+1,525,128	-1,525,128	- -	
Unobligated balance (pending rescission)...	- -	+1,649,790	- -	
1946 balance available in 1947	- -	+250,000	-250,000	
Total estimate or appropriation	- -	- -	- -	

DECREASES

(1) The decrease of $3,629,000 for 1947 consists of (a) the $22,186 decrease for overtime, and (b) decrease of $3,606,814 due to liquidation of the project by December 31, 1946.

CHANGE IN LANGUAGE

It is proposed to delete the entire language of this item due to the liquidation of the Emergency Rubber Project by December 31, 1946.

WORK UNDER THIS APPROPRIATION

The Emergency Rubber Project is a joint operation in the Department with funds allotted and transferred to participating bureaus and offices as indicated in the following statement:

Bureau or item	1945	1946 (estimated)	1947 (estimated)
Forest Service	$3,914,936	3 676,160	250,000
Bureau of Plant Industry, Soils, and Agricultural Engineering	235,445	101,230	- -
Bureau of Agricultural and Industrial Chemistry	91,635	62,195	- -
Bureau of Entomology and Plant Quarantine	7,920	4,923	- -
Overtime pay	188,939	22,186	- -
Covered into Treasury as miscellaneous receipts, Public Law 529	918	- -	- -
Unobligated balance (pending rescission)	- -	1,649,790	- -
Transferred to "Salaries and Expenses, Office of Solicitor"	- -	12,306	- -
Total available	4,464,793	5,528,790	250,000

Guayule

The purpose of this program was to provide a domestic source of natural rubber as an insurance policy for the manufacture of heavy duty tires and other products requiring the admixture of natural rubber during the war emergency.

Approximately 32,000 net acres of guayule were planted in the fiscal years 1942-44 to obtain an emergency source of crude rubber for the nation's stockpile. Harvesting and milling of these plantings began in the fiscal year 1945, the earliest feasible time to obtain rubber from such plantings. A limited amount of wild shrub was milled, however, prior to that time.

Fiscal Year 1945.

In the Fiscal Year 1945 the Bakersfield mill was completed and shakedown runs concluded in mid-May. A total of 308 long tons of rubber was milled out at the Salinas and Bakersfield mills from plantation and nursery shrub before the end of the fiscal year.

In April 1945, in response to a request by the Special Director of Rubber Programs, WPB, the Project cooperated with a committee of rubber research personnel from the rubber manufacturing companies in a quick

survey to determine the feasibility of milling out all the guayule plantations within the ensuing two years to supply the critically needed natural rubber during the period of the greatest emergency. This committee recommended the construction of four new mill units and the milling out before April 1, 1947 of the estimated 12,000 long tons of rubber in the plantations. This was to be accomplished by the Rubber Reserve Company in cooperation with the Department of Agriculture.

On May 7, this report was approved by the Chairman of the War Production Board, who requested the Rubber Reserve Company to make the necessary arrangements.

Before entering into an agreement with Rubber Reserve, it was deemed necessary by the Department to clarify restrictive language in the 1946 appropriation for the Emergency Rubber Project to enable the Project to sell baled guayule shrub to the Rubber Reserve Company at a price reflecting the amortized cost of the new mills. This matter was clarified by an appropriate amendment and the Rubber Reserve Company was advised that the Department would proceed on the basis of its proposal.

Fiscal Year 1946.

Maintenance of plantations, carrying on of essential research, the operation of two processing plants (the old Salinas mill and the newly constructed Bakersfield plant)--were provided for in the 1946 Agricultural Appropriation Act.

Nursery and plantation operating equipment not required for the current plantation maintenance program was to be transferred or sold. Project personnel in classified positions was cut about 50% during the fiscal year 1946. Labor for field and mill operations was somewhat easier to secure chiefly through the utilization of prisoners of war. Several guayule labor camps were in use by the Army as Good Conduct Camps for war prisoners, thus assuring the Project a supply of economical and satisfactory labor.

The program of cooperation in fiscal year 1946 as agreed upon with the Rubber Reserve Company which called for the construction of four new mill units and the accelerated milling out of the plantations, was abandoned on VJ-Day, and the plan of operation originally proposed for fiscal year 1946 was resumed. The existing plantations were irrigated and cared for, surplus equipment disposed of, and the two mill units operated chiefly with a view to determining the possibilities of new equipment and methods of milling designed to improve recovery of rubber from young shrub and to reduce costs.

This maintenance of plantations and experimental milling program was carried on until agreement was reached December 3, 1945, by both Houses of Congress on the First Supplemental Appropriation Rescission Bill, 1946, H.R. 4407, which directed the liquidation of the Emergency Rubber Project. Up to the date of closing the mills, about 400 long tons of rubber had been milled out in the Fiscal Year 1946.

The two mills are now closed; bids on the Salinas mill and the Government's interest in the tributory plantations are being solicited. The labor camps and miscellaneous property are being declared surplus. The farmers in the Bakersfield area want their land back at once for cropping to potatoes and alfalfa, and will not agree to maintain these plantations for a future harvest of the guayule shrub should that be desired by anyone who may purchase the mill.

Every effort will be made to dispose of the Salinas mill and plantations by sale. If the mill can not be sold as an operating unit, it will be declared surplus. Failing to sell the plantations, the landowners will be requested to accept the shrub in lieu of reconditioning the land. If neither of these alternatives can be employed, efforts will be made to contract with landowners or with other parties to destroy the plantation shrub and recondition the land; in the final analysis, plantations which cannot be disposed of in the manner outlined above will be eradicated and the land reconditioned by force account.

Under the existing plan for liquidation, and before June 30, 1946, most of the plantation lands will have been reconditioned and returned to the owners or releases will have been obtained from the owners where they wish to maintain the plantations. The mills, nurseries, labor camps and other Project property will be largely disposed of before the end of this fiscal year.

Fiscal Year 1947.

There will remain to be completed after July 1, 1946, some cleanup of plantations, property disposal and the termination and transfer of Project personnel, but all liquidation activities of the Emergency Rubber Project will be completed by December 31, 1946.

Plant Research

During the past fiscal year, research workers have been able to obtain definite proof of many factors of guayule production on which previously only hypotheses or indications existed.

Third year results in field test show that, on irrigated land with standard spacings, guayule tends to produce nearly as much rubber in its third year as in the first two years combined, indicating the inadvisability of a crop cycle of less than 3 years for wide-spaced plantations. Further tests may indicate an even longer cycle.

The first harvest of small plats of direct-seeded, close-spaced guayule gave a yield at the rate of 1,200 pounds of rubber per acre for 20-month-old plants at Salinas, California. Further tests with direct seeding of guayule developed a satisfactory basis for recommending farm practices for seeding guayule direct in the field in the Salinas Valley, California; Salt River Valley, Arizona; Mesilla Valley, New Mexico; and for Southeast Texas. Only partial success was obtained in direct seeding in dry land areas in Texas and California. Field scale experiments in direct seeding have not been tried.

Nursery stock was produced on a field scale using furrow irrigation instead of the standard overhead irrigation. Such stock transplanted to the field at Phoenix, Arizona resulted in exceptionally good stands.

Studies were continued on harvesting of tops only at harvest instead of digging the entire plant. Plant survival after mowing averaged better than 90 percent. Treatments that favor high accumulation of rubber just before harvest also favor prompt resumption of growth after mowing.

Considerable progress was made in the identification and control of diseases affecting guayule. Fungicidal dusts were found effective in controlling damping-off organisms on seed. A serious disease of guayule in Southeast Texas caused by Diplodia was studied and a determination was made of the environmental conditions under which infection occurs. A study was completed and a manuscript submitted for publication on the variability in Pythium ultimum, a fungus causing guayule disease. Tests were completed on strain-resistance of guayule to Verticillium wilt. Strains resistant to this wilt were found. A manuscript on guayule diseases and their control was completed and submitted for publication.

Outstanding success was obtained in the program to develop new improved types of guayule. In studies of growth rate, strains of guayule have been developed which exceed the commercial strain, 593, by well over 50 percent. Strains have been isolated and increased which show, at the same time, 20 percent greater rubber percentage, 18 percent greater height, and 22 percent greater spread than 593. It has been shown that variability in strains can be markedly reduced by the method of individual plant selection. Mass selection is not as effective in this respect.

Guayule in Latin America: Indicator plantings of guayule have been continued under observation in Mexico. Monthly plantings have been made comparing direct seeding with transplanted seedlings. Chief importance has been given to the establishment of plantings under dryland conditions in the high plateau grasslands of north-central Mexico. It has been shown that when the soil moisture is adequate satisfactory stands can be established without irrigation. Growth under the grasslands conditions is satisfactory and preliminary samplings indicate a satisfactory rate of rubber accumulation. It has been shown that summer fallowing prior to planting is a good device for building up and maintaining satisfactory soil moisture.

Processing Research

Intensive laboratory and pilot plant studies, looking to the development of improved methods for the manufacture of guayule rubber, were focused primarily on items of design for new mills as being of first importance, and directed toward solving of the new and special problems presented in the processing of young shrub, and toward the production of higher quality rubber at lower cost.

In a search for possible substitutes for the conventional pebble mills, tests were undertaken in the Salinas mill to establish the milling possibilities of the Jordan engine, a machine utilized in paper mills for the refining of pulp. Work with the Jordan Mill has established that release of

rubber from shrub particles is comparable to that of pebble milling, and that the rubber after scrubbing is lower in insolubles than the pebble mill product.

Mill scale experimental work demonstrated that lowering of the pH of the mill slurry coupled with the mechanical action of pebble mills would result in the coagulation and agglomeration of latex from lush shrub. It was also found that if the rubber could be extracted from the plant prior to its coagulation within the cell, the resin and insoluble content of the crude rubber would be lower than in crude rubber obtained from conventional milling.

From tests already conducted with the acid coagulant milling, the quality of the crude rubber during the various processing stages appears to be superior to that produced by conventional milling methods, and insofar as could be determined in limited tests, there were no deleterious effects to any of the mill equipment from the use of the coagulant mixture. Positive statements, however, in regard to these two important factors cannot be made until further exhaustive tests as to the quality of both green and aged material can be made.

The importance of shrub treatment to the yield and quality of rubber obtainable from guayule has long been recognized. If shrub is to be stored, the best procedure is now seen as short field exposure, prompt defoliation of shrub upon receipt at the factory, rebaling without drying and storage under conditions to promote retting in the bale. The most positive solution of the shrub treatment problem, however, appears as the elimination as far as possible of both field exposure and sunning, with their attendant uncertainies. Investigations covering short, controlled drum retting of shrubs one week or less out of the ground, and milling, with the addition of coagulants, of defoliated shrub, lush from the field were conducted.

Considerable additional work was done on shrub retting and it has been found that retting as a step in the processing of guayule rubber offers the following advantages:

a. The production of rubber with markedly lowered resin content and improved physical properties. Acetone and benzene insolubles are no greater than those from untreated shrub.

b. Substitution of a short retting period for coagulating the latex instead of a prolonged storage period.

c. A longer period for rubber formation in the field resulting from the short interval necessary between harvesting and milling (7 to 10 days).

d. Increase in mill capacity resulting from losses in dry weight during retting of 15 to 20 percent.

With the liquidation of the project now under way, it has been necessary to terminate the following lines of research:

Pilot Plant and Laboratory Investigations: Pilot plant and laboratory investigations which have been carried on in cooperation with the Bureau of Plant Industry, Soils, and Agricultural Engineering of shrub treatment before and after harvesting. These studies of rubber quality would determine (a) effect of plant and rubber constituents and (b) effect of processing steps. This work contemplated guayule compounding studies with particular reference to blending with GR-S for optimum improvement of the latter in various applications. Also work toward perfection of existing and new analytical procedures.

Chemical research studies on the pretreatment of shrub to determine the effectiveness of solvents, alkalies, acids and steam as well as microbial research studies relative to action on plant constituents other than resins. Deresination studies including byproduct investigations as indicated by developments in connection with pretreatment of shrub.

Latex Recover: Research investigations concerned with the development of extraction and processing methods to improve the quality and increase the yield of guayule rubber. This contemplated work to establish the limitations of processing technique, the increasing of rubber concentration in original dispersions, and other factors concerned with improving economic aspects of latex recovery.

Insect Control

In surveys and investigations of insect problems, a considerable number of insects were found to infest the guayule plant in the wild state. Several of these proved injurious in greenhouses and nurseries, but only to a very limited extent in the field plantations in California.

In Texas, termites and lace bugs present a rather serious field problem if the plant is to become a farm crop.

DDT has proven very effective for control in nurseries and greenhouses.

SOIL CONSERVATION SERVICE

(a) Preamble

CHANGES IN LANGUAGE

The estimates include proposed changes in the language of this item as follows (new language underscored, deleted matter enclosed in brackets):

Change No.

1 To carry out the provisions of "An act to provide for the protection of land resources against soil erosion, and for other purposes", approved April 27, 1935 (16 U.S.C. 590a-590f), which provides for a national program of erosion control and soil and water conservation [to be carried out directly and in cooperation with other agencies], including the employment of persons and means in the District of Columbia and elsewhere (but not to exceed [$870,000] $1,027,000 may be expended for personal services in the District of Columbia), purchase of books and

2 periodicals, purchase, maintenance, repair, and operation of one passenger-carrying vehicle in the District of Columbia,

3 furnishing of subsistence to employees, [training of employees,] operation and maintenance of aircraft, and the purchase and erection or alteration of permanent buildings: * * *

The first change in language proposes that the clause "to be carried out directly and in cooperation with other agencies" be deleted in order to shorten and simplify the item. This clause is considered surplusage and, therefore, need not be retained in the annual appropriation act, the cooperative work being authorized by the Act of April 27, 1935 (16 U.S.C. 590a-590f), which established the Soil Conservation Service. Elimination of this language from the annual appropriation act will not--in any way-- change the scope or character of the work performed under this appropriation item, or the authority of the Department to cooperate with other agencies, institutions, organizations, and others in the conduct of such work.

The second change proposes to insert the word "purchase" between the words "periodicals" and "maintenance" in order to provide authority for the replacement of the one passenger-carrying automobile used on official business in the District of Columbia. By June 30, 1946, this vehicle will be 8 years old and will have been driven in excess of 40,000 miles. While the mileage driven may not seem to be excessive, all of it has been "stop and go" driving in city traffic and costs of operation and maintenance are excessive.

The third change proposes to delete the words "training of employees" as such words appear to be legislative in character and, therefore, subject to a point of order. These words were first included in the appropriation language for the Soil Conservation Service in the 1937 Agricultural Appropriation Act. Inasmuch as this special authority to employ and train people for positions in the Service is no longer utilized, its deletion will not require any change in the present operations of the Service. The regular "in-service" employee training program, for which special authority is not required, will not, of course, be affected by this deletion.

(b) Soil Conservation Research

Appropriation Act, 1946		$1,063,000
Proposed consolidation in 1947 estimates:		
From "Salaries and expenses, Soil Conservation Service, erosion control, Everglades region, Florida"		+54,500
Anticipated supplemental for additional costs due to the Federal Employees Pay Act of 1945 (Includes $10,200 for Erosion control, Everglades region, Florida)		+174,200
Total anticipated available, 1946		1,291,700
Budget estimate, 1947		1,278,000
Change for 1947:		
Overtime decrease	-20,200	
Increase	+6,500	-13,700

Note.--As indicated above, the estimates propose the consolidation of the item "Erosion control, Everglades region, Florida" with "Soil conservation research". This proposal is made in the interest of simplification and to consolidate into one item all the soil and water research work of the Soil Conservation Service. The Everglades work would be established as a separate project as shown in the following statement.

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
1. Erosion control investigations	$653,148	$733,100	$737,000	+$3,900
2. Drainage and water control investigations in humid areas	266,287	317,100	319,000	+1,900
3. Irrigation and water conservation investigations in Western areas	141,156	157,500	158,000	+500
4. Water regulation investigations to conserve the soil and reduce fire hazards in the Everglades region of Florida	60,076	63,800	64,000	+200
5. Overtime pay	164,738	20,200	- -	-20,200
Covered into Treasury as miscellaneous receipts, Public Law 529	367	- -	- -	- -
Unobligated balance	11,476	- -	- -	- -
Total available	1,297,248	1,291,700	1,278,000	-13,700 (1)
Anticipated supplemental	- -	-174,200		
Total estimate or appropriation (1945 and 1946 adjusted for comparability)	1,297,248	1,117,500	1,278,000	

INCREASES OR DECREASES

(1) The net decrease of $13,700 in this item for 1947 consists of the $20,200 decrease for overtime, and an increase of $6,500 for placing on a full year basis in 1947, within-grade salary advancements which are estimated to be in effect for only a part of the fiscal year 1946.

CHANGES IN LANGUAGE

The estimates include proposed changes in the language of the item as follows (new language underscored, deleted matter enclosed with brackets):

> Soil conservation research: For research and investigations into the character, cause, extent, history, and effects of erosion, soil and moisture depletion and methods of soil and water conservation (including the construction and hydrologic phases of farm irrigation and land drainage, and water regulation to conserve the soil and reduce fire hazards in the Everglades region of Florida, except that expenditures for all work in the Everglades region shall be limited to a sum not in excess of funds made available for such work by the State of Florida, or political subdivisions thereof); and for construction, operation, and maintenance of experimental watersheds, stations, laboratories, plots, and installations; [$1,063,000] $1,278,000.

It is proposed to consolidate with the regular research appropriation, the item "Erosion control, Everglades region, Florida". The proposed language is believed to be more descriptive of the work performed than the language previously carried for the Everglades work. No change whatever, is contemplated in the nature or scope of the work. The provision limiting the expenditure of funds to an amount made available for such work by the State of Florida or political subdivisions thereof is similar to that carried in the Act in previous years.

WORK UNDER THIS APPROPRIATION

Objective: The work is concerned with the development, adaptation, and improvement of efficient and practical conservation farming methods and practices and sound land-use principles. These research findings furnish a sound technical basis for the soil and water conservation programs of the Soil Conservation Service and the related conservation and land-use programs of other Federal and State agencies.

The Problem and its Significance: Soil depletion results, basically, from failure to adapt land use to its physical limitations. Improper land use and exploitive farming methods have caused enormous waste of soil and water resources and many problems, both physical and economic. Protection against this soil and water loss and unwise use of land can be secured by conservation farming. This means farming land according to its capabilities and treating every acre according to its individual needs. The soil and water conserving practices recommended for installation must be based upon facts established by investigation and research and not upon estimates or guesses. This is important because success of the soil conservation program is dependent upon its technical soundness.

Research into the character, causes, extent, and effect of erosion and soil and water depletion has resulted in development of many new practices and farming methods to be used for the protection of the land. However, erosion and land-use problems vary everywhere, therefore, established practices must frequently be modified to meet peculiar local conditions. New, improved, or adapted practices must be tested and proved effective and practical by field trials and tests before they can be applied with assurance over areas varying in soils, climate, and agricultural practices. There is a continuing need for intensive and wide-ranging conservation research as there are many erosion control, water disposal and use, and land-use problems which require further study and experimental tests, and new problems arise from day to day. The research work of the Soil Conservation Service is specifically directed at problems which arise in the day-to-day field operations of the Service and is an integral part of the service rendered to conservation, irrigation, and drainage districts and to other Federal and State agencies engaged in conservation work.

A special conservation problem exists in the Everglades region of Florida. This 2,700,000 acre area of low-lying peat and muck land was drained over 30 years ago with apparently little or no thought having been given to any factor except water disposal. The lowered water table has resulted in destruction of the organic soils through oxidation and by fires. In many places, the cultivated muck land and much of the virgin peat land have subsided as much as six feet since they were drained. Means of water regulation must be developed and improved to make possible the conservation of the remaining valuable agricultural lands and prevent further destructive fires. Areas not suitable for cultivation should also be determined and delineated.

General Plan: Research and Operations work in the Soil Conservation Service are so coordinated as to provide for immediate application of special research findings. No research is undertaken except on problems which directly affect the soil and water conservation program. As soon as the trend of results from a study can be perceived, measures promising to solve the problems involved are developed and tested. The development and improvement of conservation practices is accomplished in three distinct steps, as follows:

(1) Laboratory and plot work to develop basic information.
(2) Experiment station field scale trials of practices.
(3) Adaptation and testing of practices for application over extensive areas.

The first and second steps are primarily research functions, the third the joint responsibility of the "Research" and "Operations" staffs. After they have been tested the new practices and methods are, of course, incorporated into the regular soil and water conservation programs.

The program of research is cooperative with the State Experiment Stations and other agricultural agencies of the Department and the States. The State agencies, by agreement with the Secretary of Agriculture, cooperate with the Soil Conservation Service in the conduct of the work, and in most cases furnish land, laboratories, office facilities, and technical assistance as part of their cooperation. The research work of the Service is correlated with that of the Agricultural Research Administration of the Department, thus avoiding duplication and assuring desirable cooperation with other research bureaus.

Examples of Progress and Current Program: Recent accomplishments under this appropriation are cited by projects to show progress being made. Investigations and studies on which increased emphasis is now being placed are also explained.

Erosion control investigations: The work carried on under this project includes the development of agronomic and vegetative means of controlling erosion, improving productivity, and conserving soil moisture; development of improved tillage techniques; studies of the effect of farm crops, cropping systems, climate, and wind upon soil erosion and water loss, and development of control measures; studies of crops and cropping methods which are adapted to areas that are too steep for ordinary farming and upon which erosion conditions are so critical that specialized protective measures are required; and investigations of the effects of conservation farming upon the farmers' income and living standards.

In the studies being conducted at the various Experiment Stations, emphasis is being placed on developing practical land uses and conservation measures which will allow the farmer maximum flexibility in choice of crops for each land class. Good progress has been made in this field of work.

A soil's ability to take in water rapidly and to supply maximum amounts of moisture and plant nutrients depends upon organic matter content and resulting soil structure. Cropping practices are being developed to maintain or build up organic matter which normally tends to improve soil structure, increase resistance to erosion, and decrease the amount of excess water which creates the erosion hazard.

Protection from water in excess of that which can be absorbed into the soil must be secured by supplemental practices of mechanical nature, such as strip-cropping or terracing, which check velocity and conduct the water from the fields before destructive volumes and velocities are built up. Proper integration of cropping practices and supplemental mechanical control as affected by endless combinations of variable factors of soil type, slope degree and length, rainfall characteristics, etc., demands complete knowledge and understanding of each independent variable. Investigations are being conducted to develop combinations of factors necessary to give erosion control for different areas. Integration of these basic findings into successful cultural practices for specific crops and for practical crop rotation sequences for various problem areas again requires experimental testing, measurement, and field trial before these practices can be recommended for use by farmers.

Field and laboratory studies are being carried on to determine and evaluate the properties of soils which influence their permeability, moisture relations, and susceptibility to deterioration by erosion. Studies are being conducted both at experiment stations and on cooperating farms to determine the effectiveness of different plant covers in reducing soil erosion and water run-off, to determine the best methods of establishing plant covers on eroded areas, to develop cropping practices and methods of managing uncultivated crops and pastures in order to conserve soil and water, and to develop and improve tillage practices which increase surface storage of water and retard the rate of its flow. Methods of holding a much larger proportion of the water and storing it in the soils are being developed and include such practices as mulching, subsurface tillage, contour tillage, application of organic matter, water spreading, and winter cover crops. Results from field trials last year showed per acre increases in yields ranging from 10 to 20 percent as a result of such practices. Considerable progress has been made in experimental work on subsurface tillage and the use of crop residue mulches to increase water intake of the soil, reduce run-off, and control wind and water erosion. Improvements which have been developed in tillage and harvesting implements and methods have given better placement of residues and less clogging and dragging of trashy materials in tillage operations.

Investigations are being conducted to test and improve planting methods for erosion-resisting specialized crops of high economic value which are adapted to land areas that are too steep or erodible for ordinary cultivation. Bench terraces of various types and other special cultural practices are being studied to determine the best methods of growing on these lands such crops as fruits, nuts, berries, trees, improved strains of grasses, and other special crops which will provide the farmer with an additional source of income.

Studies are being conducted of practices necessary to control wind erosion. Improved methods of establishing barriers, windbreaks, and vegetation to prevent wind erosion are being developed. Wind tunnel studies are contributing valuable information on the causes and manner of soil movement by wind. Studies are being carried on to determine and evaluate the climatic and physiographic factors which cause erosion and to secure a better understanding of climate and weather variation in relation to plant growth and cropping practices. Records of rainfall, air and soil temperatures, humidity, evaporation, and wind movement are secured regularly from established points in the areas where these special studies are being conducted. From records of this type it is possible to determine probability of drought, precipitation, or frost damage at certain time intervals and geographical locations. It is also possible to determine the probability of success in planting, harvesting, or processing crops having rigid moisture and temperature requirements. Soil moisture investigations are developing a basis for guiding farm operations in the drier areas of the Great Plains.

Information secured from studies on the causes and rates of erosion for different soils and under different climatic influences has furnished the basic data for establishing differential rates of soil decline within the United States. This makes it possible to establish ratings for the many basic resource areas of the country on a time priority basis as a guide to concentration of effort in erosion control operations.

Studies are being made to determine the economic benefits to the farmer of conservation farming. Most conservation practices involve installation costs or land-use changes, therefore their effect on the farmers' immediate and future net income must be considered. Records compiled to date in all parts of the country show definitely that conservation farming prevents soil loss and deterioration, increases per acre crop yields, reduces wear and tear on machinery, saves fuel, and reduces labor costs.

The results secured from studies under this project are made immediately available to "Operations" workers for inclusion in the action program and then published as scientific papers in science journals or as State or Federal bulletins, as rapidly as conclusive evidence is available. The ten original Conservation Experiment Stations have compiled complete and comprehensive USDA Technical Bulletins covering ten full years of conservation studies. These bulletins furnish a factual basis for the conclusions upon which soil and water conservation and land-use measures are recommended. Six of these reports have been published and the remaining ones are being given the final editing prior to their printing.

Drainage and water control investigations in humid areas: The work being conducted under this project includes the development and improvement of farm drainage methods, structures, and construction equipment; studies of the various factors which affect rates of surface run-off and flood flows; and the development of engineering and mechanical controls of run-off, erosion, and siltation.

Studies are being conducted ar various locations to develop improvements in the construction, operation, and maintenance of drainage works. Good progress has been made. For example, a dragline attachment was developed last year for a farm-size tractor. This year, as a result of experimentation and study, it has been equipped with a side-arm that enables the tractor to travel along the side of the ditch and clean out drainage ditches without disturbing the side slopes. Another example of progress is the development of a gate type of dam which prevents over-drainage during dry periods. This dam operates automatically when the water reaches a predetermined height.

Investigations have been continued to determine the limitations of mole drains in different types of soil, and field trial installations have been made in Louisiana, North Dakota, Indiana, and Pennsylvania. One of the difficulties in constructing mole drains has been the fact that it has been impossible to construct them to grade with existing equipment. A hydraulic lift has been developed for a mole ditcher that overcomes this difficulty.

Observations and tests of drain tile and experimental specimens to determine kinds of cement mortar and concrete which would stand the acids of peat soils have been completed and definite conclusions reached. Kinds of cement which are satisfactory are now available to farmers. A report on these studies has been prepared for publication by the Department.

Additional information was obtained during the year on the effect of certain erosion control practices, such as contouring and surface mulching combined with subsurface tillage, on drainage, charging of ground-water storages, and run-off of incipient flood waters. Experiments conducted at the Coshocton, Ohio Experiment Station on growing corn under mulch culture proves this to be an effective means of controlling run-off and erosion in that area. The hydrologic effectiveness is reflected by the fact that during 1944 the run-off from the mulched area was but 30 percent of that from the plowed areas while soil loss was reduced from 25 tons per acre to less than a half a ton per acre.

The compilation and analysis of run-off and rainfall records were continued during the past year in cooperation with the State Agricultural Experiment Stations. A report entitled "The Hydrologic Design of Farm Ponds and Rates of Runoff for the Design of Conservation Structures in the Claypan Prairies" has been issued for use of Service technicians in the Claypan areas of Illinois, Iowa, and Missouri. Simplified instructions were also issued for the use of farm planners in the design of small farm ponds in the same areas.

At the Hydraulic Laboratory at Minneapolis, Minnesota, model tests have been conducted on outlet structures and information furnished to field workers as a construction guide. The report has been issued under the title "Design of Outlet Structures for Head Spillways." Model tests have also been made on various types of flume entrance as a design guide and a publication on this subject released. This laboratory is assisting field engineers over a wide area with their designs and is furnishing much of the basic data needed to provide for sediment control.

As a result of requests made by Service technicians and other Federal and State agencies for specific information on sedimentation of reservoirs and waterways major attention has been directed during the year to the following four lines of investigation:

(1) Collection and analysis of data for determining the storage allowance to be made for sediment in new reservoirs.
(2) Development of sediment control measures on reservoir watersheds.
(3) Development of methods for control of scouring and silting of stream channels, including bank-erosion control; and
(4) Collection of data on the effects of soil erosion on navigation on inland waters.

Most of this research work was done in cooperation with the agencies making the specific requests.

A survey of the municipally-owned hydro-electric power reservoir at Radford, Virginia, showed a loss of storage of 38.2 percent in 10 years. Surveys of storage reservoirs owned by the Glatfelter Paper Company, Spring Grove, Pennsylvania, showed that the principal reservoir had lost nearly 20 percent of its capacity since 1939. These surveys have resulted in active cooperation of reservoir owners with local soil-conservation districts in developing water and erosion control programs. Studies of municipal reservoir protection in the Southeastern States revealed that 33 percent of the 189 existing reservoirs will have a useful life of less than 50 years, and 56 percent, a useful life of less than 75 years. Their average age is now about 20 years, which means that the taxpayers will have to shoulder a large additional burden for replacement during the next several decades unless erosion control on watershed areas is rapidly extended.

Irrigation and water conservation investigations in Western areas: The work being conducted under this project includes the development of engineering principles and methods of controlling and conserving irrigation water supplies and preventing erosion, siltation, and accumulation of alkali; development and improvement of farm irrigation systems and structures; development of efficient water utilization practices; and snow survey investigations and analyses to determine available irrigation water supplies.

The results of irrigation experimentation were summarized during the year in order to bring together the best information available on the water requirements of crops in the Central Valley, California. This information is being employed by the U. S. Army Engineers and the Bureau of Reclamation to estimate the possible extent of irrigation development which can safely be planned in this important agricultural area of the West. The final figures assembled have been of high value in allocating an equitable dividision of the project costs, as between irrigation, power, flood control, navigation, salinity repulsion, municipal and industrial uses, recreation, and national security, as well as in determining the amount of land that can be served.

The results of investigations of the possibility of recharging groundwater through water spreading in the San Joaquin Valley have also been summarized. Under the Central Valley water plan of California, it is intended to recharge overdrawn pumping areas by spreading water collected in the Friant Reservoir during the non-irrigating seasons. The studies so far carried out show that infiltration rates for the San Joaquin Valley soils start out at a relatively high rate and then decrease rapidly with the continued application of water. The purpose of the investigation has been to find the cause and the means of preventing the rapid decrease. A series of some 44 ponds (0.01 acre in size) have been installed at various locations on different soil types throughout Kern and Tulare Counties in selected areas where replenishment of the groundwater is needed. The ponds have been given various treatments, such as plowing, planting of vegetation, drying out at intervals, the application of gypsum and fertilizer, and the use of chemicals to kill organic growth. Permeability tests and laboratory treatment have also been carried out in the cooperative studies. The most effective method so far developed of maintaining an adequate rate of infiltration has been that of alternate drying and wetting of the soil. Further studies are to be continued since the problem is an important one for the entire area concerned. As much as 5,000 acres might have to be set aside for spreading purposes if the present infiltration rates cannot be increased so as to store the needed amounts of water underground by using less extensive spreading basins. Preliminary investigations have been started on water spreading in the Simi and Antelope Valleys in southern California where there is urgent need of improvement in the underground water supply available for pumping for crop use.

A study is being made to determine consumptive use of irrigation water by native vegetation, irrigated lands, and evaporation from water and bare land surfaces and means of salvaging the water ordinarily lost. A progress report covering the first season's work has been completed.

Evaporation studies have been made at several locations to provide information on water losses from reservoirs in the Western States. A report covering a 5-year evaporation investigation at Fullerton, California, was completed during the year. The studies at Morris Reservoir (California) were made to determine the effect of topography, wind, temperature, and humidity on evaporation for different portions of the reservoir.

During the past year, data on the rates of sediment production in the Southwestern United States were compiled and published for the use of designing engineers. Reservoir silting in this region is a critical problem.

Studies conducted at the Hydraulic Laboratory at Pasadena, California, have included the design of the inlet for the proposed Milagra Valley Dam Spillway at San Mateo, California, and the design of an irrigation canal drop to operate under conditions of unusually high and low water in the down-stream canal. In addition, methods were developed for controlling excessive scour and sedimentation in two souther California

streams by applying bedload transportation formulas developed by sedimentation research of the Service in previous years. The formulas in their present form apply only to conditions of moderate and low rates of sediment concentration, and do not cover many important cases in the Southwest where streams carry unusually high loads. Therefore, in order to develop formulas to cover the full range of conditions encountered, further laboratory studies have been undertaken.

Much of the irrigation water supply in the West is derived from melting snow in the mountains. One of the problems of irrigation farming is the determination and management of the available water supply. Before planning his crops it is important that the irrigation farmer have an inventory of the probable supply of water in the snow fields. These inventories are the snow surveys. The research phase of this water-supply forecasting program includes providing highly specialized technical guidance in locating and laying out snow courses, evaluating the data gathered by snow surveys, and preparing reports of findings. Mimeographed reports on water-supply conditions have been released regularly during the past season and the data also broadcast by radio and published in news releases. An example of the effectiveness and importance of this work was indicated in the spring of 1944 when a serious shortage of irrigation water was threatened in the northwestern areas. By virtue of the advance warning provided by the snow surveys, cropping programs were so adjusted that disastrous crop losses were avoided. Forecasts in 1945 indicated a generally sufficient water supply, and normal cropping was planned in all but a few localized areas.

Water regulation investigations to conserve the soil and reduce fire hazards in the Everglades region of Florida: The work being conducted under this project includes the development and improvement of water management facilities and farming practices necessary to conserve the soil and water resources of the Everglades; development of fire prevention practices; making of topographic and land-use capability surveys; and studies of run-off, seepage, and evaporation.

Material progress has been made in the development of a permanent long-time program for the utilization and conservation of the organic soils of the Everglades. The technical experiments dealing with the control of subsidence by regulating the water table have been developed to the point where pilot plant studies are being made to find means of applying this information to extensive areas. Except for the topographic surveys, all surveys needed for the guidance of the entire Everglades conservation program have been completed. The topographic surveys have been completed in that portion of the area where the organic soils predominate, and completed over a considerable portion of the area distinguished by mineral soils.

Preliminary estimates have been made of the work and protective measures required to provide the outlet canals necessary for draining the organic

soils of agricultural value which lie between Lake Okeechobee, West Palm Beach, and Fort Lauderdale. The plan provides for the utilization of the greater part of the existing canals by enlarging them, installation of control structures to prevent or minimize over-drainage in dry seasons, and distribution of water for irrigation. It also provides, when considered practicable, for diversion of flood flow in the canals onto undeveloped areas. The area of cultivated crops in the Everglades is expanding rapidly. The information concerning water-control requirements, with the findings of the soil-capability survey which are being prepared for publication, should promote orderly development of the good lands and avoidance of the development of undertakings certain to be unprofitable.

Tests are being made to determine whether evaporation, transpiration, and percolation on unused lands can be utilized to dispose of excess water from cultivated lands. Movement of groundwater is also being studied.

It is required that expenditures under this project "be limited to a sum not in excess of funds made available for such work by the State of Florida, or a political subdivision thereof". The following is a statement of actual and anticipated contributions by such agencies compared with actual and proposed Federal obligations under this project:

Agency	1945 Actual	1946 Estimated	1947 Estimated
Dade County	- -	$50,000	$60,000
Dade County Fire Control Unit	$20,132	20,000	20,000
Everglades Fire Control District	108,284	108,000	108,000
Everglades Experiment Station	18,000	18,000	18,000
Everglades Drainage District	22,476	- -	- -
Total Expenditures by State Agencies	168,892	196,000	206,000
Total Federal Obligations (inclusive of overtime pay in 1945 and 1946)	68,349	64,700	64,000

(c) Soil Conservation Operations

Appropriation Act, 1946		$28,636,800
Anticipated supplemental for additional costs due to the Federal Employees Pay Act of 1945		4,575,000
Total anticipated available, 1946		33,211,800
Budget estimate, 1947		36,800,000
Change for 1947:		
Overtime decrease	-538,700	
Increase	+4,126,900	+3,588,200

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
1. Soil and water conservation operations in conservation districts and in cooperation with other Federal and State agencies:				
a. Soil and water conservation operations in conservation districts	$22,088,638	$30,303,400	$34,736,900	+$4,433,500 (1)
b. Soil and water conservation operations in cooperation with other Federal and State agencies	1,037,183	1,007,300	700,700	-306,600 (2)
Total, Project 1	23,125,821	31,310,700	35,437,600	+4,126,900
2. Operation of conservation nurseries for the furnishing of plants for use in soil and water conservation operations	1,083,816	1,170,000	1,170,000	- -
3. Overtime pay (includes overtime in allotments)	3,724,037	538,700	- -	-538,700
Allotted to:				
Bureau of Plant, Industry, Soils, and Agricultural Engineering (excludes overtime 1945, $20,128; 1946, $2,600)	166,440	192,400	192,400	- -

(Continued on next page)

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
Covered into Treasury as miscellaneous receipts, Public Law 529	$11,680	- -	- -	- -
Unobligated balance	217,126	- -	- -	- -
Total available	28,328,920	33,211,800	36,800,000	+3,588,200
Transferred to: "Salaries and expenses, Office of Information, Department of Agriculture"	+11,080	- -	- -	
Anticipated supplemental	- -	-4,575,000	- -	
Total estimate or appropriation	28,340,000	28,636,800	36,800,000	

INCREASES AND DECREASES

The net increase of $3,588,200 in this item for 1947 consists of the $538,700 decrease for overtime, and the following:

(1) An increase of $4,433,500 composed of:

(a) An increase of $4,246,500 to assist additional conservation districts with the planning and application of conservation farming practices and in effectuating adjustments in land-use:

Objective: To conserve the soil and water resources and improve the productive capacity of farm and ranch lands by providing farmers and ranchers in newly organized conservation districts, and in those districts where only part-year assistance was rendered in 1946, with such technical services and other assistance as is necessary to establish soil and water conservation farming practices and bring about sound land-use.

The Problem and its Significance: Effective and efficient soil conservation requires the treatment of each acre on every farm and ranch according to its capabilities and individual needs. Conservation farming methods and practices have been developed to provide adequate protection against the hazards of erosion, water wastage, and unwise use of land, and thousands of farmers and ranchers all over the country are receiving assistance in planning and applying them to their lands.

The most effective way of accomplishing the enormous task of eventually reaching all farmers and ranchers and thus getting nation-wide coverage with the conservation farming program is through cooperative effort with conservation districts. These districts are local units

of government organized under State laws for the specific purpose of assisting farmers and ranchers in solving their soil and water conservation and land-use problems. The increase of funds requested will enable the Service to provide assistance to additional conservation districts. The following data on district organization is indicative of the current interest in the soil and water conservation program and what may be expected in the way of requests upon the Service for technical and other assistance:

No. Districts organized as of:	Estimates made in 1946 Budget		Revised figures for 1947 Budget	
	No. Districts	Increase	No. Districts	Increase
6/15/44	1114	- -	1114	- -
6/15/45	1320	206	1346	232
6/15/46	1492	172	1536 1/	190 1/
6/15/47	- -	- -	1761	225

1/ As of November 15, 1945, 1,446 conservation districts had already been organized. This was an increase of 100 districts in the first five months of the current fiscal year.

Plan of Work: As additional conservation districts are organized and request assistance from the Service in solving their soil and water conservation and land-use problems, technicians will be assigned to the districts. These technicians will make necessary conservation surveys or soil inventories, help farmers and ranchers develop their conservation farming plans and give guidance in the installation and maintenance of practices determined necessary to conserve soil and water resources and maintain or increase per-acre production.

(b) An increase of $187,000 for placing on a full-year basis in 1947, within-grade salary advancements which will be in effect for only a part of the fiscal year 1946.

(2) A decrease of $306,600 due to incorporation within the boundaries of conservation districts of areas where soil and water conservation operations were previously carried on in cooperation with other Federal and State agencies.

WORK UNDER THIS APPROPRIATION

Objective: The work is concerned with providing direct technical and other assistance to farmers and ranchers in the preparation of conservation farming plans and the application of soil and water conservation practices. Adoption of these practices and sound land use will assure preservation of the country's soil resources, efficient use of available water supplies, increased and sustained per-acre crop yields, and protection of rivers, harbors, reservoirs, and highways from siltation and flood damage.

The Problem and its Significance: Misuse of land is not only wasteful but a threat to the permanency of agriculture. Occasionally the consequence may be only failure to obtain maximum returns for efforts and resources expended. Generally, however, the result is the irreplaceable loss of valuable soil and water resources and eventual inheritance of the many physical, economic, and social problems that accompany deterioration of farm and ranch lands by erosion.

Erosion has made serious inroads in the United States. Approximately 50 million acres of crop land have been virtually ruined for further cultivation. Another 50 million acres have been damaged in varying degrees from moderately to severely. More than half of the topsoil is already gone from 100 million additional acres, and the process is under way on a third 100 million acres. There are only about 75 million acres of farm land in the country which are not subject to erosion, including land now in crops, pasture, and woodland. Even these lands must be carefully managed if they are to remain permanently productive. Erosion is still proceeding at a rate in excess of the constructive work being done to arrest it. It is estimated that soil is being washed from the farm and ranch lands of the country at the rate of 3 billion tons per year. Costs to the United States in wasted soil, abandonment of worn out farms, railroad and highway damage, reduced reservoir capacity, flood damage, and related losses amount to almost 4 billion dollars annually.

Required protection against misuse, soil depletion, and water loss can be given our farm and ranch lands through conservation farming. This means using land in accordance with its capabilities, i.e., for the crops it is best suited to produce, and treating each acre with necessary soil and water conservation practices that have been adapted to meet its individual needs. The treatment planned must, of course, also fit the needs, adaptability and preference of the farmer and should provide as adequate protection as possible for adjoining lands. Farmers and ranchers need the help of skilled technicians to get a properly adapted conservation farming program under way on their lands. Their services are necessary to secure and analyze the basic data needed to make the conservation farming plan that each farm or ranch should have, to collaborate with the farmer or rancher in preparing it, and to give him technical guidance in installing and maintaining the conservation practices determined necessary to protect his land.

Effecting widespread application of the conservation farming system is one of the most urgent and immense tasks facing the country today. Nationwide farm and ranch coverage with the conservation program is necessary to keep the agricultural plant of the United States in a permanently healthful condition.

The advantages of conservation farming are many. For example, it not only protects the soil, but it increases the average yields per acre as well. It also provides for crop diversification that is so urgently needed in many sections of the country. Furthermore, records show that it reduces wear and tear on equipment, saves fuel, seed, and fertilizer, and reduces labor costs. In short, conservation farming pays tangible dividends!

The General Plan of Work: For budgetary purposes this appropriation item is divided into two projects, (1) providing assistance to farmers and ranchers in preparing conservation farming plans and in establishing adapted soil and water conservation practices on their lands, and (2) operating nurseries to furnish planting materials needed for erosion control purposes. The first project is further subdivided to separate the work done in conservation districts and that carried on outside the boundaries of these districts in cooperation with other Federal and State agencies.

The principal activity of the Service is, of course, that of rendering assistance to farmers and ranchers in conservation districts. These districts with which the Service cooperates are local units of government organized under State laws, are under the leadership of a State committee, and are responsible to the State legislatures. They are founded upon the sound principle of local initiative, local direction, and local control, and are formed only in response to the petition and favorable referendum vote of the land owners and operators who are carrying on agricultural operations within their proposed boundaries. In this way, the necessary basis has been laid for maximum exercise of initiative and responsibility by the farmers themselves.

Soil and water conservation and sound land use are the common objectives of the conservation districts and the Soil Conservation Service. There is no question that these objectives can be realized most effectively and economically by cooperative effort with the districts. The Service is making available to districts the services of trained conservationists who give technical guidance to farmers and ranchers in the preparation of conservation farming plans and the establishment and maintenance of conservation practices on their lands. Other assistance provided consists of the grant of conservation planting materials (trees, shrubs, vines, and grass seeds) and the loan or grant of available field equipment. The amount and type of assistance furnished to any district is governed by the district's needs and ability to make the most effective use of it on the maximum number of farms and ranches and, of course, by availability of funds. The district governing bodies determine the

types of conservation work on which the assistance the Soil Conservation Service can make available will be used, and the priority of the farms and ranches on which work will be done.

In planning for conservation farming the capability or suitability of the land for a specified use must first be determined. This requires the making of a conservation survey or physical inventory of the land to secure data on the physical factors (kind of soil, degree of slope, character and extent of erosion, and climate) which influence land use. After this survey has been completed the capabilities and needs of the land of each individual farm and ranch are determined. Then skilled and experienced farm planning technicians assist farmers and ranchers in groups, and later individually, in developing conservation farming plans. These plans are based on the information developed from the conservation survey and on the farmer's resources, his choice of crops, his type of farming, and many other economic, social, and personal factors. The combination of soil and water conservation practices chosen allows for the best possible use of the farmer's land, water supply, labor, and equipment, and his ability as a manager. The farming plan charts for a specific period of time, usually from 3 to 5 years, the type of use, cultivation, and plantings that are required to conserve soil and water resources. For example, determination is made as to the need for such practices as strip-cropping, contouring, terracing, sodded waterways, pasture improvement, crop rotation, mulching, land leveling, and water spreading, and the proper location for installation of these practices. Crops and forage needed to meet feed requirements for present or contemplated livestock are also considered. These two broad types of information exemplify the physical and managerial factors which the farm planner and the farmer consider in developing the farm plan. After development of the conservation farming plan, assistance is furnished the farmer in execution of that plan, and may include furnishing available equipment and planting stock.

In those areas of the West where snow furnishes an important part of the water used for irrigation purposes, watershed snow surveys are conducted in cooperation with Federal, State, local, and private agencies to secure data on which dependable estimates of the probable run-off from the snow pack can be made. Forecasts of irrigation water supplies are then published and broadcast. Farmers rely on the forecasts to determine what types of crops to plant and whether the potential water supply will permit expansion of acreage to be cultivated. These forecasts are also of great importance to bankers, shippers, power companies or organizations, water supply systems, and flood control agencies.

The revegetation of eroded areas to which conservation measures are applied in conservation districts is dependent to a considerable extent upon the maintenance of an adequate supply of suitable planting materials and upon the development of new propagation and cultural practices. The Service maintains thirty nursery units to produce or purchase plants and seeds, collect them from wild habitats for propagation, conduct observational studies to determine the best types of plants for specific planting site conditions, and search for new strains of plants and grasses which are exceptionally well suited for erosion control purposes.

Examples of Progress and Current Program: The progress being made toward attaining the objective under this appropriation and some of the recent accomplishments are presented under the applicable projects.

Soil and water conservation operations in conservation districts: Provision is made under this project for assisting conservation districts to develop and carry out locally-adapted programs of soil and water conservation and proper land use by furnishing assistance to farmers and ranchers within the districts in the preparation and application of conservation farming plans. This assistance includes the services of such skilled technicians as soil conservationists, soil scientists, engineers, agronomists, foresters, and conservation and engineering aides, and, when available, the loan of special equipment of a kind which is beyond the purchase ability of the individual farmer or for other reasons not readily available to owners and operators of farm lands within the districts. (Some conservation planting materials are also furnished. This subject is covered under the conservation nursery project.)

Forty-seven States (all except Connecticut) which include well over 99 percent of the farm and ranch lands of the United States, have now adopted soil conservation district laws. Attached is a map showing the soil conservation districts which had been established as of June 15, 1945. The rate of district organization in 1945 was much greater than the estimates made at the beginning of that fiscal year. It was anticipated that 1,310 conservation districts would be organized by June 15, 1945, but actually 1,346 were organized. In addition, approximately 22,000,000 acres were added to existing districts during the year.

The following tabulations show the number of conservation districts organized, funds available for assistance to districts, and other pertinent data regarding districts and accomplishments:

(1) Number of Conservation Districts Organized

Date or Fiscal Year	Number of Conservation Districts Organized 1/	No. Districts Organized on a District-Year Basis	"District-Years of Assistance" for which Funds Provided/Requested
June 15, 1944	1,114		
1945		1,228	1,124
June 15, 1945	1,346		
1946		1,441	1,355
June 15, 1946	1,536		
1947		1,648	1,605
June 15, 1947	1,761		

1/ The number of conservation districts indicated as organized is based upon certificates of organization being issued by the respective States. This is the time at which the Soil Conservation Service is generally

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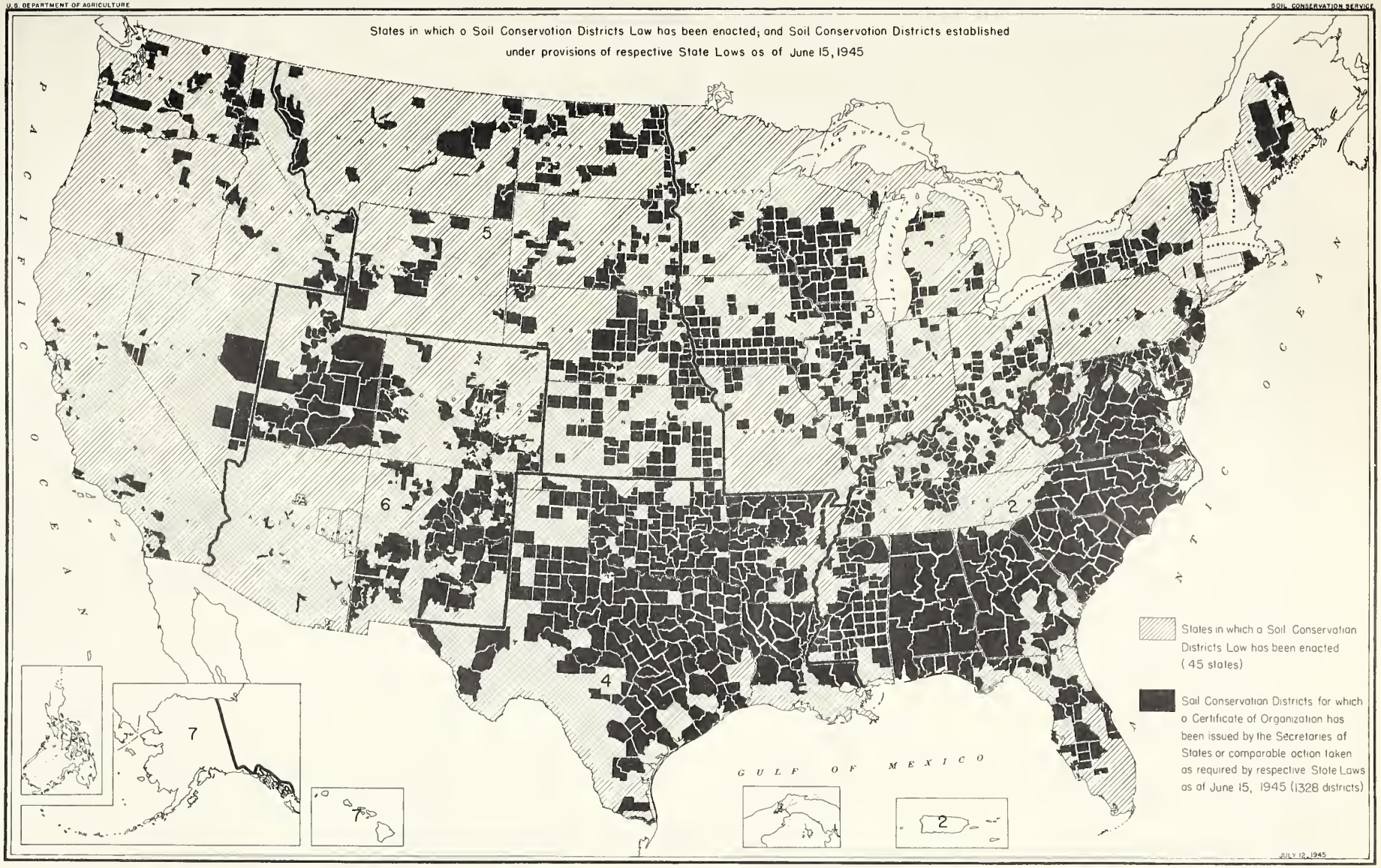
States in which a Soil Conservation Districts Law has been enacted; and Soil Conservation Districts established under provisions of respective State Laws as of June 15, 1945



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requested, either by the governing body or by farmers who are assisting in organizing this body, to assist the districts in making reconnaissance surveys and in developing work plans and programs before Memoranda of Understanding with the Department and supplemental agreements with the Soil Conservation Service are signed. After that time, of course, other assistance is furnished to farmers and ranchers through the districts.

(2) Funds Available for Assistance to Conservation Districts

Fiscal Year	Funds Appropriated or Requested	Average Amount Funds Provided per District
1945	$25,483,786	$22,672
1946	30,803,700	22,733
1947	34,736,900	21,643

(3) Number of Farms and Farm Acreage in Conservation Districts

Date	No. Districts Organized	Number Farms Included	Approx. Acres in Farms
Actual			
June 15, 1944	1,114	2,870,000	418,458,000
Average per district		2,576	375,636
June 15, 1945	1,346	3,410,829	485,368,298
Average per district		2,534	360,600
Estimated			
June 15, 1946	1,536	3,840,000	537,600,000
June 15, 1947	1,761	4,310,000	598,700,000

(4) Planning and Treatment Accomplishments in Conservation Districts

Item	Fiscal Year 1944	Fiscal Year 1945	Cumulative to 6/30/45
Individual farm and ranch plans	57,125	60,100	288,136
Acres planned	18,162,057	19,076,378	81,195,375
Acres treated	11,182,662	12,241,604	35,685,435

(5) Cost of Planning and Establishing Conservation Farming Practices

Item	1944	1945
Cost per acre for planning	$0.41	$0.44
Cost per acre for treatment	1.01	1.29
Total	1.42	1.73

The per-acre cost to the individual farmer averages two to three times the cost to the Service. The farmer's expenses include the cost of labor, of all except special equipment, of material, and most of the planting stock. He also pays operation and replacement costs on the heavy earth-moving or other special equipment made available to him through the conservation district.

A "farmer opinion" survey conducted to secure data on some of the results of conservation farming brought out some significant facts regarding production. The survey of 9,348 farms (entire United States) showed a percentage increase in average annual production of all major crops of 35.7 percent per acre. Greater production on less acres of land will enable retirement of badly eroded areas to permanent vegetation.

As a means of securing a more rapid and general adoption of conservation farming methods by as many farmers and ranchers as possible, local leaders are being trained in the methods of applying conservation practices in accordance with land-use capabilities so that they in turn can assist others with this work. Conservation practices which the farmer can install with a minimum of technical guidance are emphasized. The Service contribution consists of developing lists of conservation practices for local areas, preparing simple specifications for establishing and maintaining the practices, and holding training meetings and method demonstrations. During the calendar year 1944 there were 193,371 farms and 3,455,196 acres of land in conservation districts on which one or more soil and water conservation practices were applied under this program.

During the past fiscal year the Service completed a State summarization of its national Conservation Needs Analysis. Summarization of the data and information on a basic land resource area basis is expected to be completed during the present fiscal year. This comprehensive and far-reaching analysis indicates, on the basis of the capabilities of the land, the land-use adjustments that are needed between crop land, grazing land, woodland and other land uses. The proven conservation practices have been calculated for each acre of farm land and the needed technical assistance, equipment, labor, and materials to assure the proper installation of those practices, have been determined, irrespective of source. Copies of the summary data have been made available to technicians throughout the Service, to other Federal agencies, to State and local agencies interested in the subject, and to a number of colleges, schools, and civic organizations.

The Service has also made an analysis during the past year of the soil and water conservation needs of the country in terms of urgency of treatment required to prevent irreparable damage. Each basic land resource area was considered and separations were shown on a map according to three categories. The land which was included in "priority one" is that which, unless treated during a relatively short period of years, will deteriorate one or more capability classes. The inclusion of landsin either "priority two" or "priority three" was based on the same considerations, except that in each of these cases a longer period of years could elapse, if no treatment was given, before the land would deteriorate by one or more capability classes.

The known conservation needs practices were then distributed upon the basis of these time priority delineations of a basic land resource area. Thus the relative size of the total conservation needs job yet remaining for a given resource area, for land within soil conservation districts, and for the nation, in terms of three categories of urgency of need for land treatment were determined.

Soil and water conservation operations in cooperation with other Federal and State agencies: Under this project limited assistance in planning and establishing conservation farming practices is furnished to farmers and ranchers in areas outside conservation districts. The work is carried on in close cooperation with other Federal and State agencies that have an interest and responsibility in furthering programs of soil and water conservation and sound land use. This cooperative effort is expected to create a greater public consciousness of the nation's erosion and land-use problems and to encourage and secure more general and widespread adoption by farmers and ranchers of conservation farming methods.

Soil conservationists are cooperatively employed by the Extension Service and the Soil Conservation Service in 37 States and Puerto Rico. These specialists develop the educational material on soil and water conservation and work very closely with other Extension Service personnel, county agents, agricultural teachers, supervisors of conservation districts, and farm leaders in urging organized local action on conservation programs and in disseminating information on conservation farming methods. The Extension soil conservationists and other State and county extension workers devoted 75,232 days to soil conservation educational work in 2,819 counties during the past year and were assisted in this work in 38,490 communities by 73,283 farm leaders.

During the past year the Soil Conservation Service cooperated with the Extension Service in furthering 4-H Club work in soil and water conservation. State and national contests were held in which 40 States participated. There were also 5,218 boys and girls enrolled in special soil and water conservation projects.

Service technicians collaborated with county Extension agents in selecting 6,041 Extension demonstration farms and ranches in 47 States, Puerto Rico, and Hawaii and developed the conservation farming plans for them.

These farms have been very effective in stimulating local interest in the soil and water conservation program.

Snow surveys were considerably expanded during the 1945 fiscal year. In cooperation with and under the guidance of irrigation research specialists, 44 new snow courses were added to the existing network. There were 2,200 snow surveys made during the year by 955 snow surveyors on 924 individual snow courses in 12 Western States. Seven new shelter cabins were constructed during the year and 183 cabins were stocked with emergency supplies either by the Service or the cooperating agenices. Four additional agencies were added to the list of snow survey cooperators which now totals 170. (See "Soil Conservation Research" for information on the research phases of snow surveys.)

Operation of conservation nurseries for the furnishing of plants for use in soil and water conservation operations: The work under this project consists of the production, purchase, or collection of locally-adapted and improved varieties of planting stock and seed for grant to farmers through conservation districts for erosion control planting purposes.

During the fiscal year 1945 the Soil Conservation Service furnished to cooperating conservation districts approximately 50,000,000 trees, shrubs, and other plants, and more than 1,000,000 pounds of grass and legume seed. Only incentive quantities of these materials were granted to individual farmers.

The emphasis which has been placed in the past few years upon improving pastures and range lands has drawn heavily upon available seed stocks and supplies. The nursery program will, therefore, continue to stress seed production. Improved methods of planting, harvesting, and processing native grass seed of high quality have been developed. The stimulus given by this work has resulted in the collection by farmers and commercial seedsmen of over 2 million pounds of seed of previously undomesticated grasses. Conservation districts, in many localities, have established seed plots to produce for the use of farmers in the district, types of grass and legume seed that are not available commercially. Assistance is being given these districts in harvesting and processing the seed raised.

The Soil Conservation Service is working cooperatively with Federal research agencies and with the State Experiment Stations on forage plant improvement and testing work. Field plantings of these improved plant materials are observed by Service technicians to determine their value for conservation and economic use under wide variations of soil and climate. Foundation seed of the superior varieties is increased by soil conservation nurseries and in soil conservation districts in accordance with seed production standards established by State seed certifying agencies and Federal Research Bureaus. Excellent results have been obtained and many improved varieties of planting materials have been provided in the "Soil Conservation Operations" program.

(d) Erosion Control, Everglades Region, Florida

Appropriation Act, 1946	$54,500
Proposed consolidation of this item in the 1947 estimates with "Soil conservation research"	-54,500
Budget estimate, 1947	- -

Note.--Accordingly, the language for "Erosion control, Everglades region, Florida" is proposed for deletion in the estimates as a separate paragraph, but language therefor has been included in the item "Soil conservation research."

(e) Farm and Other Private Forestry Cooperation

This budget schedule covers obligations for the fiscal year 1945 under an allotment from the appropriation "Farm and Other Private Forestry Cooperation". Farm forestry demonstrations were carried out in cooperation with various States on representative groups of farms in order to encourage the conservation and development of the farm woodland as a productive unit and integral part of the farming business. The appropriation is discussed in its entirety in the Notes under the heading "Farm and Other Private Forestry Cooperation" under the Forest Service.

(f) Flood Control, General (Transfer to Agriculture)
(Allotment to Soil Conservation Service)

This budget schedule covers estimated obligations for the fiscal years 1946 and 1947 under funds transferred to the Department of Agriculture from appropriations made to the War Department for flood control purposes.

Funds allotted for the fiscal year 1946 will be used to resume work on 32 uncompleted surveys and to begin preparation of flood control work plans on the eleven watersheds on which flood control operations were authorized by the Flood Control Act of December 22, 1944 (Public Law 534, 78th Congress).

Funds indicated for obligation in the schedule will be used in the fiscal year 1947 to continue the surveys previously initiated, to complete the flood control work plans on the eleven watersheds, and to initiate the actual operations for runoff and waterflow retardation as authorized. The Flood Control program is discussed in its entirety under that heading elsewhere in these Explantory Notes.

(g) Special Technical Investigations, International Joint Commission, United States and Canada
(Transfer to Soil Conservation Service)

This budget schedule covers obligations under a transfer from the State Department for special and technical investigations carried on in cooperation with the International Joint Commission of the United States

and Canada. The work consists of appraising the effect on the irrigated lands in the Kootenai River Valley in Northern Idaho of fluctuating ground-water conditions which are influenced by the operation of hydro-electric facilities in Canada. This is a service performed for the State Department to secure technical data required in connection with treaty obligations.

(h) Working Funds (Soil Conservation Service)

This budget schedule covers obligations under advances pursuant to Section 601 of the Economy Act of June 30, 1932, for technical services performed for the War Department and other Federal agencies. These obligations are shown in detail in the Statement of Obligations under Supplemental Funds, appearing at the end of these Explanatory Notes for the Soil Conservation Service.

(i) Land Utilization and Retirement of Submarginal Land

Appropriation Act, 1946		$1,087,300
Anticipated supplemental for additional costs due to the Federal Employees Pay Act of 1945		+144,000
Total anticipated available, 1946		1,231,300
Budget estimate, 1947		1,453,000
Change for 1947:		
Overtime decrease	-17,550	
Increase	+239,250	+221,700

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
1. Development and management of land acquired .	$1,090,596	$1,213,750	$1,453,000	+$239,250
2. Overtime costs	152,002	17,550	- -	-17,550
Covered into Treasury as miscellaneous receipts, Public Law 529	521	- -	- -	- -
Unobligated balance	6,881	- -	- -	- -
Total available	1,250,000	1,231,300	1,453,000	+221,700 (1)
Anticipated supplemental.	- -	-144,000	- -	
Total estimate or appropriation	1,250,000	1,087,300	1,453,000	

INCREASES OR DECREASES

(1) The net increase of $221,700 in this item for 1947 consists of the $17,550 decrease for overtime, and:

(a) An increase of $233,650 to revegetate and otherwise improve approximately 57,000 acres of idle Government-owned lands in order to make them useful to local farmers and ranchers and to remove them from erosion hazards.

Objective: To treat as much of the remaining unimproved lands acquired under Title III of the Bankhead-Jones Farm Tenant Act as can practicably be done and make the improved lands available to local farmers and ranchers for grazing, pasture, and other purposes.

The Problem and its Significance: During the war emphasis was placed on doing the type of development work which would contribute most to the war effort and yet accomplish the purposes of the Land Utilization program. Idle and unproductive lands owned by the Government have been seeded and otherwise treated for grazing and pasture purposes. Good progress has been made to date with the resources

that were available for development work. However, as of July 1, 1946 there will still be approximately 365,000 acres of these lands remaining in 27 livestock producing States which should be treated and placed into permanent productive use at the earliest possible date. Present funds are not adequate to accomplish this work as rapidly as it should be done. It is estimated that about 20,000 acres can be treated in 1947 with funds included in the base amount and a total of about 77,000 acres if the additional funds requested are appropriated.

Much of this land is in hazardous wind-blow areas and does not have a permanent vegetative cover and thus presents a serious erosion hazard. Other large acreages in the semi-arid areas, although not a serious erosion hazard, have not been contributing to the forage producing needs of the communities in which they are located. The acreage in the more humid areas are growing up to scrub and brush, thus increasing the ultimate cost of development with each year of continued idleness. The forage which should be produced on all these lands is urgently needed to assist in carrying the large number of stock now on farms and ranches. Additional delay of development will defer still further the time when these lands can make their maximum return in income to the United States and to the counties in which the lands are located.

Plan of Work: In the Great Plains and western areas, the denuded and abandoned crop lands will be seeded to suitable grass after only a minimum of soil preparation. In the dust bowl area of the Southern Great Plains soil stabilization work must be undertaken on some of the land before it can be seeded. In the more humid areas lime and fertilizer will be applied and some seeding, scrubbing, and plowing done in order to make the land productive. Fences and livestock water facilities will be constructed where necessary in connection with the use of the land improved. As development is completed the lands will be made available to local farmers and ranchers, at equitable rates, for grazing and pasture purposes.

(b) An increase of $5,600 to place on a full-year basis in 1947, within-grade salary advancements which are estimated to be in effect for only part of the fiscal year 1946.

CHANGES IN LANGUAGE

The estimates include proposed changes in the language of this item as follows (new language underscored, deleted matter enclosed in brackets):

To enable the Secretary to carry out the provisions of Title III of the Bankhead-Jones Farm Tenant Act (7 U.S.C. 1010-1013), and the provisions of the Act approved August 11, 1945 (Public Law 179, Seventy-ninth Congress), including the employment of persons and means in the District of Columbia and elsewhere, [$1,087,300] $1,453,000.

This change in language proposes the insertion of the words, "and the provisions of the Act approved August 11, 1945 (Public Law 179, 79th Congress)", in order to provide funds to process such claims as may develop as a result of Public Law 179. This law authorizes the Secretary of Agriculture to adjust boundary disputes by settling claims to certain so-called Sebastian Martin grant lands in the State of New Mexico. These lands are now a part of the Grant Lands Land Utilization Project and were acquired by the Federal Government under the authority of Title III of the Bankhead-Jones Farm Tenant Act.

Section 32(c) of the Bankhead-Jones Farm Tenant Act authorizes the Secretary "to sell, exchange, lease or otherwise dispose of, with or without consideration, any property so acquired under such terms and conditions as he deems will best accomplish the purposes of this title, but any sale, exchange, or grant shall be made only to public authorities and agencies and only on condition that the property is used for public purposes. * * *" (Underscoring supplied.) Funds specifically appropriated to carry out the provisions of Title III of the Farm Tenant Act would not, therefore, be available to pay the expenses of disposing of Land Utilization project lands to individuals as provided in Public Law 179. It is for this reason that additional appropriating language is being requested.

The land in dispute consists of approximately 75 separate tracts and aggregates only about 300 acres. It is possible, therefore, that as many as 75 claims may develop as a result of Public Law 179. If any of the tracts of land involved are not claimed and are determined to be unsuitable for use and administration under the Land Utilization program, the Secretary is authorized by Public Law 179 to sell them at the value appraised by the Government.

It is estimated that the entire cost of adjusting the claims that may be filed as a result of Public Law 179, including a metes and bounds survey, will not exceed $2,500. However, it is impossible to estimate how much of this will be required each year. The act allows claimants twenty years from the time the United States acquired the land, to establish their claims. Since the land was deeded to the United States on December 31, 1934, claims may be filed up to December 31, 1954. Most claims probably will be made within the next two or three years. Inasmuch as the costs will be very nominal, it is believed they can be absorbed within the regular Land Utilization item. Therefore, no increase in appropriation is being requested for this specific purpose.

WORK UNDER THIS APPROPRIATION

Objective: The work under this appropriation item is concerned with the acquisition, development, and management of submarginal lands which are not primarily suitable for cultivation. The purpose is to correct maladjustments in land use, conserve soil and water resources, provide opportunities for farm families to obtain the essentials of life and health, and improve the general economy of rural communities.

The Problem and its Significance: In many rural areas of the United States, a substantial amount of the acreage in cultivation or subject thereto, is unsuited for such use because of natural infertility, loss of productivity through misuse, location, or other physical factors. Continuance in cultivation of such land has resulted in further depletion of the soil, farm poverty, tax delinquency, and excessive costs of local services such as schools and roads. The families which occupy submarginal farms are generally stranded in their present localities because of the lack of a market for their properties and insufficient financial resources to enable them to relocate elsewhere.

Solution of the human, land, and governmental problems in those areas where a substantial number of the farms are unsuited for cultivation can be brought about only by changes in land use and occupancy. These adjustments are generally so far-reaching as to be beyond the ability of both individual families and local governments to bring about. The authority contained in Title III of the Bankhead-Jones Farm Tenant Act provides for making the necessary changes in land use and occupancy, and the means whereby, through coordination of public programs and cooperation of local governments, rehabilitation of land and people can be permanently effected.

Through the Land Utilization program efforts are being made to clear up complicated patterns of ownership and eliminate economically hopeless farm units. This is generally accomplished by purchasing the submarginal lands and putting them to beneficial use in conjunction with adjacent private lands. Project land resources are made available for use by local farmers and ranchers. This enables them to shift to a less intensive use of their own lands and furnishes them a basis for making a satisfactory living. Much of the work under this program is necessarily demonstrational in character. It is intended that it will stimulate local interest and action in correcting maladjustments in the use of land and in establishing soil and water conservation practices adapted to land not primarily suited for cultivation.

The Soil Conservation Service at the present time has responsibility for administering 82 project areas under the provisions of Title III of the Bankhead-Jones Farm Tenant Act. These projects include 7,141,000 acres of Government-owned land located in 34 States. Approximately 6,130,000 acres of this land are best suited for grazing purposes; around 600,000 acres are adapted to forestry development

and management; and the remainder is suitable for cropping, wildlife, recreation, and other miscellaneous purposes. About 1,100,000 acres of the land determined to be suitable for grazing required establishment of special soil and water conservation practices and a satisfactory vegetative cover in order to place them in productive use consistant with the capabilities of the land. Completion of the development work, adequate maintenance, and proper management will permit maximum utilization of the land by local farmers and ranchers and rural communities, will improve the agricultural economy of the areas affected, and will provide increased cash returns on the Government's investment.

General Plan: General Land Utilization operations plans provide that surveys be made of areas of land considered unsuited for cultivation to ascertain the land use, economic, and other pertinent problems of the area and to determine which tracts must be purchased in order to permit solution of the problems. If funds are available to purchase the land marked for acquisition, the various tracts are appraised to determine their fair market value, options to purchase are obtained, title examinations and other legal proceedings are completed, and the purchases consummated. (The land purchase phase of this program has been deferred for the present.)

Plans for the development, improvement, and maintenance of land and facilities acquired are prepared and carried out as rapidly as available funds and physical factors will permit. This work consists of applying erosion control measures; establishing proper vegetative cover on abandoned crop land; seeding and otherwise improving land suitable for pastures and other grazing use; developing wells and springs; constructing stock watering facilities and fences; obliterating useless buildings and fences; tree planting; constructing roads, fire breaks and trails, lookout towers, and telephone lines; constructing some buildings and occasionally recreational facilities; and maintaining facilities in good repair.

The lands and facilities on the Land Utilization projects are made available to local farmers and ranchers at equitable rates and under specific use conditions. Use permits are granted for grazing, cutting hay, cropping, timber harvesting, and other purposes. Most recreational facilities are handled through concessionaires' contracts.

Other activities on the projects include patrolling and firefighting, and dissemination to users of the land of information on soil and water conservation practices and proper land use.

Examples of Progress and Current Program: General land purchases were discontinued, for the duration of the war, at the close of the 1942 fiscal year. However, there are still some necessary expenditures incidental to the land acquisition function, and there will continue to be as long as the lands are administered by the Federal Government. The work involved includes clearance of titles, including reservations in titles, appraising, title examination and recordings

in connection with land exchanges; settling of claims from county tax officials; final closing title searches; payments to land-owners of funds which have been placed in the outstanding liabilities account of the General Accounting Office; and disposition of land purchase funds withheld from payment to blocked nationals.

No new land purchases were made under the Land Utilization program during the fiscal year 1945. However, a number of applications for the exchange of private lands for Government lands were approved which resulted in a net increase to the Government of 4,303 acres. No new land purchases are contemplated in either the fiscal years 1946 or 1947.

The grazing lands on the Land Utilization projects furnished 1,553,330 animal unit months of grazing to local livestock owners, an increase of 107,000 animal unit months over the previous year. About 22,000,000 board feet of timber products were harvested during the year from project woodlands which represents an increase of 10 percent over the previous year.

Some of the more important items of development work completed during the year were 82,276 acres seeded to grasses and legumes; 2,690 acres fertilized for pasture purposes; 1,898 acres limed for pasture purposes; 506 miles of fence constructed; 124 stock water dams constructed and 777,000 trees planted.

It was estimated that, as of July 1, 1945, there remained approximately 430,000 acres of land to be seeded to grasses and legumes. This figure is higher than that previously reported because plans have been made to seed some lands which were not originally contemplated to be seeded. This includes lands which it was anticipated would revegetate themselves naturally, but which have not done so, and range lands now predominantly covered with sagebrush which more recent information indicates should be seeded in order to be placed in most productive use. There have, of course, also been some seeding failures. It is estimated that about 65,000 acres can be seeded and otherwise developed for grazing during the fiscal year 1946, thus leaving approximately 365,000 acres yet to be improved as of June 30, 1946.

While the real benefits derived from the improvement and management of these lands are the opportunities which have been made available to local farmers and ranchers for stabilizing their operations and providing sufficient grass for livestock, the financial returns to the Government have also been substantial. During the calendar year 1944, the total income derived from the Land Utilization projects administered by the Soil Conservation Service amounted to $482,702. Of this amount, 25 percent or approximately $120,675 was paid, in lieu of taxes, to counties in which the land is located. The following table shows the types of revenue and the amount received for each:

Privilege	Amount
Cropping	$16,501
Haying	13,749
Grazing	279,427
Building occupancy	6,001
Recreation	16,504
Mineral royalties	11,585
Easements	154
Forest products	114,185
Salvaged improvements	23,948
Unclassified	648
Total	482,702

Revenues from these projects are currently estimated at about $528,000 for the calendar year 1945 and $540,000 for the calendar year 1946.

(j) Payments to Counties from Submarginal Land Program, Farm Tenant Act (Permanent Appropriation)

This item covers obligations for the payment to counties of 25 percent of the net revenues received each calendar year by the Soil Conservation Service and the Forest Service from the use of lands administered by the Secretary under the provisions of Title III of the Bankhead-Jones Farm Tenant Act, approved July 22, 1937 as follows:

Calendar Year in which Revenue Received	Twenty-five percent of Net Revenue		
	Appropriated for Fiscal Year 1945	Estimated for Fiscal Year 1946	Estimated for Fiscal Year 1947
1943	$111,254	- -	- -
1944	128,683	- -	- -
1945	- -	$140,000	- -
1946	- -	- -	$145,000
Total	239,937	140,000	145,000

(k) Excess Payments, Submarginal Land Program, Farm Tenant Act (Permanent Appropriation)

This item covers obligations in the fiscal year 1945, for refunding unearned receipts which were collected for the use of lands held by the Secretary under Title III of the Farm Tenant Act, approved July 22, 1937.

(1) Water Conservation and Utilization Projects

Appropriation Act, 1946		$1,165,066
1945 funds available in 1946		415,883
Total available, 1946		1,580,949
Deduct:		
Transfer in 1946 to "Salaries and Expenses, Office of Solicitor"	-$11,200	
1946 funds estimated for obligation in 1947...	-431,000	-442,200
Total estimated obligations, 1946		1,138,749
Budget estimate, 1947 (total available funds)		1,131,000
Change for 1947:		
Overtime decrease	-9,393	
Increase	+1,644	-7,749*

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
1. Project investigations and surveys	$67,182	$112,000	$112,000	- -
2. Acquisition of land..	117,666	138,100	138,100	- -
3. Land development	579,246	814,256	815,900	+1,644
4. Land management, settlement and technical guidance	45,474	65,000	65,000	- -
5. Overtime pay	56,617	9,393	- -	-9,393
Total estimated obligations	866,185	1,138,749	1,131,000	-7,749*
Transferred to:				
"Salaries and Expenses, Office of Solicitor"	- -	+11,200	- -	
1944 balance available in 1945	-1,282,068	- -	- -	
1945 balance available in 1946	+415,883	-415,883	- -	
1946 balance available in 1947	- -	+431,000	-431,000	
Total direct appropriation	- -	1,165,066	700,000	

* Decrease on a working fund basis. There is a decrease of $465,066 (including $9,393 overtime and $11,200 representing elimination of the transfer to the Office of Solicitor) in the direct appropriation estimate. However, due to the carry-over of a 1946 balance into 1947 sufficient funds will be available to provide for the continuation of this work at approximately the same level in 1947 as in 1946.

INCREASES OR DECREASES

The net decrease of $7,749 in working funds available under this item for 1947 consists of the $9,393 decrease for overtime and an increase of $1,644 for placing on a full-year basis in 1947, within-grade salary advancements which are estimated to be in effect for only part of the fiscal year 1946.

CHANGES IN LANGUAGE

The estimates include changes in the language of this item as follows (new language underscored, deleted matter enclosed in brackets):

> For expenses necessary to enable the Secretary [, through such agencies of the Department as he may designate,] to carry into effect the functions of the Department under the Act of October 14, 1940 (16 U.S.C. 590y-z-10), as amended, relating to the construction, operation, and maintenance of water conservation and utilization projects, [$1,165,066], $700,000, to be immediately available and to remain available until expended, which sum shall be merged with the unexpended balances of funds heretofore appropriated or transferred to said Department for the purposes of said Act, including personal services in the District of Columbia; purchase of books of reference and periodicals; and leveling or otherwise preparing [such lands] any lands, irrespective of ownership, within the boundaries of approved projects for the utilization of irrigation water [, irrespective of ownership].

The first change in language proposes to delete the phrase "through such agencies of the Department as he may designate", since such authority is contained in the Act of October 14, 1940, Public Law 848, 76th Congress and is considered to be unnecessary in the appropriation act.

The second change proposes to delete the words "such lands" and "irrespective of ownership" and insert in lieu thereof the phrase "any lands, irrespective of ownership, within the boundaries of approved projects" solely for the purpose of clarifying the reading of the item.

WORK UNDER THIS APPROPRIATION

Objective: The work is concerned with developing irrigated and irrigable land for efficient application and use of irrigation water; with providing settlement opportunities for farm families and veterans; and with securing efficient land use and conservation of soil and water resources on the irrigation farms developed.

The Problem and its Significance: Considerable of the available irrigation water supplies of the West are still being wasted each year either through seasonal run-off or because they are not efficiently utilized on the farms. Water storage and delivery facilities are being developed under the Water Conservation and Utilization program which will make additional irrigation water available either through new supply systems or through increasing the supply of existing systems.

Farm land must be properly developed for irrigation purposes in order to make efficient use of the irrigation water to be made available by project construction. This development work requires a degree of technical skill not normally possessed by the average farm operator and the use of heavy earth moving equipment of a type which is generally beyond the purchase ability of the individual farmer and not ordinarily required in his farming operation.

Because of size or ownership, some irrigable land in areas that can be developed for profitable irrigation farming, does not fit into the ultimate operating unit pattern that must be developed. Large ownerships, if they are to be developed under the Water Conservation and Utilization program, must be subdivided to farm units of 160 acres or less. In many cases tracts of land needed to complete the reorganized operating unit pattern of a project area are owned either by aged people seeking to retire or by individuals who are not interested in irrigated agriculture. In other instances, the holdings of operators already in the project area are inadequate to provide a reasonable living standard or to permit most efficient utilization of available resources. These lands must, in many cases, be purchased by the Government for development and resale in order to accomplish the purposes of the program.

The matter of providing settlement opportunities for needy farm families and returning veterans is important at this time as is also that of establishing adequate feed reserves for western livestock in order to supplement the carrying capacity of the range. Western irrigated agriculture can be considerably expanded and opportunities provided many families to make an adequate living if existing water resources are fully and efficiently utilized on land properly developed for irrigation. There should be, of course, reasonable assurance that prospective settlers will be qualified to operate successfully the farm units they desire to purchase; therefore, these individuals must be selected with great care.

In order to conserve valuable water resources, prevent leaching and erosion, increase or maintain production; and encourage efficiency in farming operations, the new farm operator should be furnished technical guidance on water application and disposal, soil management, erosion control, weed suppression, cropping, rotations, farm management, maintenance and proper use of irrigation structures and equipment, and other irrigation farming operations and problems. The furnishing of adequate guidance on these farming operations and problems by experienced technicians will prevent waste and damage and will often mean the difference between success and failure of a farming enterprise.

The General Plan of Work: Work under this appropriation is carried on cooperatively with the Bureau of Reclamation. The enabling legislation provides that the Department of Interior construct the primary water supply features such as dams, reservoirs, and principal canals. The Secretary of Agriculture is authorized, pursuant to cooperative agreement with the Secretary of the Interior, to acquire such agricultural lands as are needed to readjust land-ownership and operating unit patterns; to arrange for the development of both Government and privately-owned lands within the projects by such means as clearing, leveling, constructing farm water-distributing systems, and readjusting operating unit patterns to provide for efficient cultivation and irrigation; to arrange for settlement of lands on a sound agricultural basis; to extend guidance and advice to settlers on the projects in matters of farm practice, soil conservation, and efficient land use; and to lease or sell lands owned by the United States.

Investigations and surveys are first made by experienced agricultural economists, soils technicians, and engineers to determine the feasibility of projects which are proposed for construction. Detailed soil and topographic surveys precede actual dirt-moving work which must be carefully planned to prevent leveling of land where the soil is too shallow, to prevent removal of too much topsoil, and to lessen development costs. Land leveling and other development work is done by force account with Government-owned earth-moving equipment or by contract if it can be accomplished at less cost.

In those instances where additional land is needed to enable readjustment of operating units on the projects, acquisition action is taken by the Government. However, effecting adjustments by sale or exchange of land between private owners is encouraged.

As Government-owned land is developed for irrigation farming and prepared for sale, properly qualified settlers are sought to purchase the farm units. Careful selection of these individuals is made from (1) farm families now making only an existence on submarginal land, (2) war veterans with a farming background, (3) returning war plant workers who desire to resume farming, and (4) farmers and ranchers located in or near the projects who need irrigated acreage to supplement their present dry farm or range holdings. Prior to sale, these farms are leased to prospective purchasers and local farmers and ranchers at equitable rental rates.

Experienced irrigation engineers, farm planners, soils specialists, and other technicians are assigned to provide technical guidance to farm operators within the project area. They demonstrate proper techniques of water and soil management, prepare conservation farming and farm management plans, indicate where improvements in farm practice and land use are necessary, and otherwise assist the farmers in solving complex farming problems.

Examples of Progress and Current Program: Recent accomplishments under this appropriation item are cited by projects to show progress being made.

General: The administration of the Water Conservation and Utilization program was transferred to the Soil Conservation Service from the Farm Security Administration by direction of the War Food Administrator in Administrator's Memorandum No. 27, Revision 1 (Amendment 6), dated March 30, 1945. Active direction of the program was assumed by the Soil Conservation Service on July 1, 1945. Fund estimates for construction of water conservation and utilization projects under authority of the Act of October 14, 1940, as amended, were presented in the 1946 budget and justified under five separate financial projects. The funds budgeted under the general project "Administration" have been distributed to the projects which receive the direct benefit of the obligations incurred thereunder.

The following adjustment was made in the project distribution of the $1,165,066 appropriated under this item for 1946:

Financial Project Designation Prior to July 1, 1945	Revised Financial Projects 1/			
	Project Investigations and Surveys	Acquisition of Land	Land Development	Land Management, Settlement, and Technical Guidance
1. Investigations and surveys ...	$100,000	--	--	--
2. Settlement and technical guidance	--	--	--	$137,741
3. Land acquisition	--	$181,531	--	--
4. Improvement of land	--	--	$660,794	--
5. Administration	8,000	3,469	52,572	10,959
Total, 1946..	108,000	185,000	713,366	148,700

1/ Excludes $10,000 transferred to the Office of the Solicitor for legal work.

Project investigations and surveys: The work under this project, which is carried on cooperatively with the Bureau of Reclamation, consists of investigating and reviewing for technical and economic soundness the project proposals received by the Bureau of Reclamation and the Soil Conservation Service, making surveys and field investigations to determine feasibility of the work requested to be done, and preparing reports and Presidential dockets based on findings.

Gross potentialities for irrigation land development under this program are estimated to include about 1,200 projects. The following statement shows work that has been done under this project and part of what remains to be done:

Item	Through June 30, 1944	Accomplished during 1945	Total as of June 30, 1945
Project referrals received	350	- -	350
Field investigations conducted	146	19	165
Preliminary reports made	125	12	137
Presidential dockets prepared	38	5	43

Of the 350 project referrals received, 165 have had some investigation made, 19 projects have been approved, and 185 have had no investigation.

Acquisition of land: Land on the projects is purchased only if it is essential to the accomplishment of the purposes of the Water Conservation and Utilization program and operating unit pattern adjustments cannot be effected between private owners by sale or exchange of land. As of June 30, 1945, 135,373 acres of land had been purchased by the Government. It is anticipated that an additional 6,000 acres of land will be purchased during 1946 on the Bitterroot (Montana), Mancos (Colorado), and Missoula (Montana), projects. It is planned that all of the expenditures for land acquisition will be reimbursed to the Government, with interest, when the land is sold.

Land development: Development and improvement for irrigation farming purposes of both Government-owned and privately-owned land is carried on under this financial project. It consists of making detailed land classification and topographic surveys, clearing brush, leveling land, constructing farm ditches, drains, and water control structures, and reorganizing and subdividing farm units. Land development work is being done both by force account and under contract. The following is a statement showing some of the major items of development work that has been done on the water conservation and utilization projects:

Item	Through June 30, 1944	Accomplished during 1945	Total as of June 30, 1945
Topographic surveys, acres	--	--	133,000
Land classification surveys, acres	--	--	152,000
Acres land cleared	15,592	1,878	17,470
Acres land leveled	19,691	12,642	32,333
Miles farm laterals constructed	93	18	111
Number irrigation structures built	1,456	845	2,301
Miles farm drains constructed	54	23	77

Based on average costs to date, it is estimated that it will be possible to develop approximately 20,400 acres during the current fiscal year. However, since such factors as location, topography, cover, and soil type cause wide variations in the cost of the various items of work as between projects or areas on a project, some deviation from the number of acres estimated may be expected. The cost of the work done under this project, with interest considered, will eventually return to the Government an amount in excess of 100% of the original expenditure.

Land management, settlement, and technical guidance: The work under this project consists of protecting, managing, and leasing Government-owned lands and structures, selecting settlers for purchase of the developed farm units, consummating sale of the farm, and furnishing technical guidance to purchasers and to private land owners within the project area on proper irrigation farming methods and land use.

Irrigation water is now available on a number of the projects and development of land has progressed far enough that settlement and disposal of a considerable number of the farm units can be accomplished. Every effort is being made to dispose of lands in accordance with program objectives as soon as possible after development is completed.

There are approximately 600 farm units in Government ownership on the Water Conservation and Utilization projects in various stages of development. Tenants, which have been selected as prospective purchasers by committees composed of local people who are familiar with the project area, the families under consideration, and their ability to assume ownership and operation of a farm, now occupy and operate 120 of the farm units. All other acquired lands are temporarily leased for crop production or soil improvement purposes except those on which earth moving operations are actually in progress. During 1945, development was completed on fifty-two farm units and these will be sold to eligible farm families as expeditiously as possible.

(1) Construction, Water Conservation and Utility Projects
(Transfer from Interior Department)

This budget schedule covers obligations of funds transferred from the Department of the Interior to be used for the acquisition of land and the development of both Government-owned and privately owned land in Water Conservation and Utility Projects. Remaining funds are for use only on the First and Second Divisions of the Buffalo Rapids Project and on the Buford-Trenton Project. It is estimated that all funds available for the First and Second Divisions of the Buffalo Rapids Project will be obligated during the fiscal year 1946 and that those available for the Buford-Trenton Project will be obligated in the fiscal year 1947.

STATEMENT OF OBLIGATIONS UNDER SUPPLEMENTAL FUNDS
(1945 and 1946 amounts include overtime costs)

Item	Obligations, 1945	Estimated obligations, 1946	Estimated obligations, 1947
Cooperation with the American Republics (Transfer from State): Training in soil conservation of trainees from other American Republics 1/.	$2,931	$27,609	$44,842
Farm and Other Private Forestry Cooperation (Allotment to Soil Conservation Service): Cooperation with States in carrying out farm forestry operations, including intensive projects and technical service to farmers and to legally competent and adequate organization of farmers	133,604	- -	- -
Flood Control, General (Transfer to Agriculture) (Allotment to Soil Conservation Service):			
Preliminary examinations and surveys	- -	117,000	448,800
Prosecution of work of water flow retardation and soil erosion prevention	- -	432,370	1,278,435
Total, Flood Control	- -	549,370	1,727,235

1/ Budget schedule for this item appears under the State Department chapter of the Budget.

(Continued on next page)

Item	Obligations, 1945	Estimated obligations, 1946	Estimated obligations, 1947
Special and Technical Investigations, International Joint Commission, United States and Canada (Transfer to Agriculture) (Soil Conservation Service): Appraisal of results of increasing the height of ground-water table of lands adjacent to Kootenai Lake ...	1,387	1,900	1,850
Working Funds, Agriculture (Soil Conservation Service) Advances from:			
Federal Works Agency: Public Buildings Administration, providing wartime security for field cartographic laboratories	33,815	4,997	- -
Selective Service System: Technical direction of program for civilian public service projects for conscientious objectors .	228,669	246,960	- -
Treasury Department: Procurement Division, for carrying out a training program for five Chinese students	- -	1,500	- -
War Department: Army Map Service, transliteration of Chinese maps	4,855	2,255	- -
Corps of Engineers, mapping of strategic areas	52,160	4,872	- -
Army Air Forces, research, compilation, drafting, and reproduction of aeronautical, flight and Loran charts, pilots handbooks, and relief models	259,905	173,268	- -
Army Map Service, preparation and drafting of maps and charts of foreign areas	2,039	- -	- -
Ordnance Department, for carrying out research investigations	- -	30,845	- -
Total, War Department..	318,959	211,240	- -

(Continued on next page)

Item	Obligations, 1945	Estimated obligations, 1946	Estimated obligations, 1947
Working Funds, Agriculture (Soil Conservation Service) Advances from: (Cont.)			
Office of Coordinator of Inter-American Affairs: Comprehensive training of Latin American technicians in the principles and practices of soil and water conservation and proper land use	- -	1,000	- -
Total, Working Funds .	581,443	465,697	- -
Construction, Water Conservation and Utility Projects (Allotment to Agriculture) (Soil Conservation Service): Acquisition and construction of water conservation and utility projects	130,878	187,683	275,800
TOTAL, OBLIGATIONS UNDER SUPPLEMENTAL FUNDS	850,243	1,232,259	2,049,727

PASSENGER-CARRYING VEHICLES

The budget estimates for the Soil Conservation Service for 1947 include the sum of $873,550 to provide for (1) the operation, maintenance, and repair of 1,595 passenger-carrying vehicles, (2) the replacement of 546 (34 percent of the number in use) of these vehicles at a net cost of $409,500, after considering exchange allowances, (3) the purchase of 6 additional vehicles under the Water Conservation and Utilization Project program, at a cost of approximately $6,300, and (4) the purchase of 35 additional vehicles under the Flood Control program at a cost of approximately $36,750.

During the fiscal year 1945, 130 passenger-carrying vehicles were acquired to replace other vehicles which were approximately 9 years old and which had each been driven in excess of 90,000 miles. It is planned during the fiscal year 1946 to replace 150 vehicles which are 9 or 10 years old and which have been driven, on the average, in excess of 100,000 miles. This will provide for replacing approximately 10 percent of the number in use.

By June 30, 1946, approximately 13 percent of the present number of passenger-carrying vehicles will have been in operation 7 years, 11 percent 8 years, 12 percent 9 years and 14 percent 10 years. Over 33

percent of the number in use will have driven in excess of 75,000 miles. Experience has shown that it would be more economical to trade in about 20 percent of the total number in use each year. However, only about 19 percent of such number has been replaced during the last three fiscal years because of the unavailability of passenger-carrying vehicles. The result has been an increased cost of operation, maintenance and repair.

Should it be necessary to purchase used vehicles because of the unavailability of new ones, the funds requested would be needed for additional repair expense.

PENALTY MAIL
Sec. 2, Public Law 364, 78th Congress
(Allotment to Soil Conservation Service)

	1945	1946	1947	Increase (+) or decrease (-) 1947 over 1946
Category 1	$ 2,968	$3,293	$3,800	+ $ 507
Category 2	36,200	40,900	46,200	+ 5,300
Total	39,168	44,193	50,000	+ 5,807

Category 1 consists of technical leaflets, bulletins, and other material relating to the programs of the Soil Conservation Service. Approximately 30 percent is sent to educational and other institutions and organizations, 30 percent to State, county and municipal agencies, 30 percent to individual farmers, school teachers and students, and 10 percent to commercial organizations and agricultural groups. Material under this category is mailed only in response to specific requests.

Category 2 consists of correspondence necessary in conducting the business of the Soil Conservation Service, which is highly decentralized. About 75 percent consists of within-Government administrative work such as reports and forms relating to work program progress and accomplishments; reports and correspondence regarding the status of appropriations and miscellaneous funds; mailings incident to recruiting, hiring, and payment of salaries to personnel; correspondence and forms concerned with the purchase of and payment for supplies, materials, equipment, and so forth. The other 25 percent of mailings in this category consists of administrative correspondence between Soil Conservation Service offices and outside individuals and concerns.

Within-Service and inter-Departmental administrative work constitutes the bulk of the mailings of the Service. Because of the nature of its work, the Soil Conservation Service has decentralized its organization as much as possible. The greater part of the employees of the Service work out of field offices directly assisting farmers and ranchers to prepare and establish conservation farming plans. These estimates cover the estimated cost of mail to be dispatched during the fiscal year 1947 from the Washington Office, seven regional offices, forty-five State offices and approximately 2,800 field offices located in conservation districts, nurseries, research projects, land utilization projects, water conservation projects, and flood control projects. Because of the close working relationships maintained with farmers, ranchers, soil conservation district supervisors, agricultural colleges, and other Federal and State agencies, and in connection with its purchasing and contracting work there is also a substantial volume of mail with outside individuals, organizations and business concerns.

The increase of $5,807 is based on the propsoed increase of $4,246,500 for conservation district work and an estimated increase in Flood Control work. It is estimated that approximately 225 new offices will be establishe in the fiscal year 1947 in order to assist newly organized soil conservation districts and will require an increased volume of mail incident to their establishment. The organization of new conservation districts and expansion of flood control work will also require a proportionate increase in the volume of regular mail in State and regional offices due to the necessity of increasing mailing lists for official instructions, information, and reports and for performing the normal administrative work.

PRODUCTION AND MARKETING ADMINISTRATION

(a) Conservation and Use of Agricultural Land Resources

Appropriation Act, 1946 (including $13,000,000 reappropriated from "Parity Payments" balance)		$355,250,000
Second Deficiency Appropriation Act, 1945 (for measuring burley tobacco acreages)		408,000
Total available, 1946		355,658,000
Budget estimate, 1947		270,000,000
Change for 1947:		
Overtime decrease	-$144,538	
Other decrease	-85,513,462	-85,658,000

The Agricultural Conservation Program is on a calendar year basis. The 1945 program closed on December 31, 1945, and the 1946 program, for which the estimate for the fiscal year 1947 is submitted, will close on December 31, 1946. The Congress authorized for 1944, 1945, and 1946, programs of soil-building and soil- and water-conservation practices, the total cost of which, including administration, were limited to $313,000,000, $300,000,000, and $300,000,000, respectively. For each of the 1944 and 1945 programs (in the appropriations for the fiscal years 1945 and 1946) an additional $12,500,000 was provided for making payments for harvesting seeds of grasses and legumes determined to be necessary for an adequate supply of such seeds. The estimate for the fiscal year 1947 includes a similar amount for such payments in connection with the 1946 program. The appropriation for the fiscal year 1946 provided $29,750,000 for making payments to producers to encourage and increase production of flax seed for the crop year 1945, as authorized by section 5 of Public Law 551, approved December 23, 1944. No similar item is included in the estimate for the 1946 program (1947 fiscal year).

The effect of the decrease of $85,658,000 in the estimate for the fiscal year 1947 is reflected, by projects, in the statement on the next page.

PROJECT STATEMENT

Project	On a Program Basis			
	1944 (F. Y. 1945)	1945 (F. Y. 1946)	1946 (F. Y. 1947)	Increase or Decrease
Agricultural Conservation Program Payments (cash payments or advances in conservation materials and services) to assist farmers in carrying out needed soil-building and soil-and-water-conserving practices, including additional payments for harvesting seeds of critically-needed grasses and legumes ..	$295,643,000	$278,148,319	$241,000,000	-$37,148,319
Flax Seed Program Payments to encourage and increase production of flax seed for the crop year 1945 as authorized by section 5 of Public Law 551, approved December 23, 1944	- -	29,500,000	- -	-29,500,000
Total payments or advances to farmers	295,643,000	307,648,319	241,000,000	-66,648,319
Restoring Depletion of Fund for purchasing conservation materials and services to be advanced to farmers in lieu of cash payments	- -	23,000,000	- -	-23,000,000
Allotments and Transfers from Program Funds to other agencies for program expenses incurred by them	720,710	737,312	658,902	-78,410
Operating Expenses:				
National and State administrative expense	8,146,053	8,226,300	7,886,480	-339,820
Cooperating agencies	29,097	17,320	17,320	- -
Overtime pay	1,272,721	165,766	- -	-165,766
Expenses of county agricultural conservation associations	22,612,466	20,265,105	20,437,298	+172,193
Total operating expenses	a/ 32,060,337	a/ 28,674,491	28,341,098	-333,393
Grand Total Obligations - Agricultural Conservation Program	328,424,047	360,060,122	270,000,000	-90,060,122 (1)
Difference in amount used for advance purchases of conservation materials and services from prior fiscal year appropriations for current program and amount to be used for advance purchase of conservation materials and services from current fiscal year appropriation for ensuing calendar year program	+15,184,673	-3,685,472	- -	
Received by allotment from "Salaries and expenses, War Food Administration, Department of Agriculture"	-7,810,369	-4,402,122	- -	
Received by loans from Commodity Credit Corporation	-46,000,000	-9,314,528	-9,000,000	
Repayment of loans from Commodity Credit Corporation	+12,701,649	+13,000,000	+9,000,000	
Net Obligations - appropriated funds	302,500,000	355,658,000	270,000,000	
Received by transfer from "Parity Payments" balance	- -	-13,000,000	- -	
Total estimate or appropriation	302,500,000	342,658,000	270,000,000	

a/ For comparability there have been included in operating expenses for the 1944 and 1945 programs the sums of $7,810,369 and $4,402,122, respectively, made available from the appropriation "Salaries and expenses, War Food Administration" for rendering special services to farmers. These amounts were transferred to the consolidated appropriation accounts provided by Section 392(a) of the Agricultural Adjustment Act of 1938 for National and State office administrative expenses and expenses of county agricultural conservation associations.

INCREASES OR DECREASES
(Program Year Basis)

(1) The reduction of $90,060,122 in the 1946 Agricultural Conservation Program as compared with the 1945 program is composed of a decrease of $4,402,122 in funds made available from "Salaries and expenses, War Food Administration" for special services to farmers in connection with agricultural production and marketing, transportation, storage, machinery, supplies, equipment, etc., and a decrease of $85,658,000 in "Conservation and Use of Agricultural Land Resources," consisting of the following:

(a) A decrease of $66,648,319 in conservation payments to farmers, composed of:

A decrease of $37,148,319 in payments to farmers for carrying out soil-building and soil-and-water-conserving practices during the program year ending December 31, 1946, as follows:

	Appropriation, 1946 (1945 Program)	Estimate 1947 (1946 Program)	Decrease
Payments to farmers under Agricultural Conservation Program:			
State programs.	$263,811,319	$226,663,000	-$37,148,319
Insular programs	1,030,000	1,030,000	- -
Naval stores program	807,000	807,000	- -
Additional seed payments	12,500,000	12,500,000	- -
Total program payments	278,148,319	241,000,000	-37,148,319

The need for war production took its toll of soil resources built up and stored under the Agricultural Conservation Program with the result that there is need for stimulating the performance of conservation practices. Shortages of labor, equipment, and machinery during the war period created a backlog of the more permanent soil conserving and building practices. This, coupled with the natural result of intensive production for war needs which changed sharply regular farm operations, such as the important crop rotations, shows clearly a need for continuing assistance to farmers in making up for lost soil fertility and reconverting from the necessity during the war of putting production first and conservation second.

It is, and has been, the policy of the Department to reduce rates and to shift more of the cost of a practice to farmers as rapidly as farmers recognize their value and the rate could be reduced without serious danger of decreasing the extent of the practice to be performed. This permitted the adoption of recommendations of State research and technical agencies for placing added emphasis on some practices, which were not being carried out in the desired volume, and for adding certain new practices. It also made it possible to offer some assistance and encouragement for the steadily increasing volume of other practices performed by farmers.

While it is planned to maintain conservation practices in the 1946 program at the 1945 level, this will be accomplished under the Budget estimate by requiring approximately 50 percent contribution on the part of farmers as compared with 42 percent under the 1945 program.

A decrease of $29,500,000 due to the elimination of a nonrecurring item in the 1946 fiscal year appropriation for making payments to encourage increased production of flax seed for the crop year 1945 pursuant to the provisions of section 5 of Public Law 551, approved December 23, 1944. No authorization was made for similar payments under the 1946 Agricultural Conservation Program.

(b) A decrease of $23,000,000 due to the elimination of a nonrecurring item for restoring the 1946 fiscal year fund for purchasing conservation materials and services to be advanced to farmers in lieu of cash payments.

[Note.--This amount was included in the 1946 fiscal year appropriation to restore the depletion in the operating fund for purchasing conservation materials and services. This fund was depleted by $23,000,000 due to unanticipated heavy participation by farmers in the 1944 program. The First Supplemental Appropriation Act, 1945, increased the limitation of the 1944 agricultural conservation program by $23,000,000 from the $290,000,000 provided in the 1945 appropriation for the regular conservation program to $313,000,000 (exclusive of the special appropriation of $12,500,000 for additional payments for harvesting critically-needed seeds). However, no additional funds were provided to cover this increase in authorization. Therefore, in order to make full payments at the announced rates to farmers for carrying out practices under the 1944 program, the amount available for the purchase of conservation materials and services for subsequent programs was depleted by $23,000,000.]

(c) A decrease of $78,410 in transfers from program funds to other agencies. This results from a reduction in transfers to the Treasury Department and the General Accounting Office for services in issuing checks and preauditing payments to farmers.

(d) A net decrease of $333,393 in operating expenses, including expenses of county agricultural conservation associations. The Department of Agriculture Appropriation Act, 1944, imposed for the first time an over-all limitation on administrative expenses including expenses of county agricultural conservation associations under the item "Conservation and Use of Agricultural Land Resources", reducing the amount thereunder available for this purpose. To offset this decrease, additional administrative funds were provided under the item "Salaries and Expenses, War Food Administration" for carrying out certain phases of the agricultural conservation program in connection with agricultural production and marketing, transportation, storage, etc. For comparability, therefore, the amounts allotted from "Salaries and Expenses, War Food Administration" have been included in the project statement under "Operating Expenses," for the fiscal years 1945 and 1946. The net decrease of $333,393 in the consolidated funds for operating expenses consists of a decrease of $4,402,122 in the funds made available under "Salaries and expenses, War Food Administration," a decrease of $144,538 for overtime, and an increase of $4,213,267 as follows:

An increase of $1,218,466 for checking compliance of conservation practices.

State Offices, $201,650: The increase will permit a spot check of about 1-1/2 percent of all farms participating in the agricultural conservation program as compared to the present inadequate check of only about 1/2 of one percent of such farms. Additional funds are required for supervising county office performance personnel so that spot checks will be made in an accurate manner and to the minimum extent necessary to determine that the interest of the Government and of the farmers is protected. Increased checking at the State level will result in better quality performance for a greater extent of practices thereby increasing the returns from assistance to farmers for carrying out these practices. It will also result in uniformity among counties in checking practices. This spot check, together with more adequate training of county and community committeemen by State office personnel, will bring about a more effective and efficient administration of the program at the county level and will provide further assurance that practices are being carried out in accordance with approved specifications which are designed to obtain the best return from the conservation measure. Spot checks at the State level serve two purposes - to see that performance is actually being carried out by the farmer and to supervise and check on county employees to see that they not only properly discharge their supervisory responsibilities but also that they are in a position to adequately advise farmers in carrying out conservation measures.

County Agricultural Conservation Associations, $1,016,816: The increase will permit checking, at the county level about 18 percent of all farms participating in the conservation program as compared with the checking of only about 2 percent of such farms in the 1945 program. The primary checking of performance of conservation practices carried out by farmers participating in the program must be made by qualified county personnel. Such checking is essential to determine the extent of the practice and to see that it meets the technical requirements set up as a prerequisite for payment. The increase in the number and volume of technical practices has increased the need for such checking and has made more detailed and time-consuming inspections necessary to determine that the specifications of such practices have been met. An increase in the percentage of all practices inspected by association personnel will result in making conservation payments only on those farms where an adequate program has been carried out. The relatively few inspections that have been possible during the past few years have brought to attention many instances where closer inspection at the proper time may have caused the disallowance of conservation payments, would have corrected the technical deficiencies of the practices being carried out and would have resulted in a more uniform application of the program to all participating farms. Standards of performance must be maintained in order to protect the investment of the farmer and of public funds in these conservation measures.

An increase of $191,200 for more thorough check of applications for payment (in State Offices).

The funds available for auditing applications for payment in recent years to assure proper disbursements have not permitted examination by State Offices of all payment documents. Additional funds are needed for maintenance of necessary safeguards of program expenditures, not only through a more adequate audit force to review applications for payment in the State Offices, but of equal importance, to enable the State Office to assure proper understanding of payment procedures by county office personnel. This latter function not only better protects the financial interest of the Government but is of service to farmers because payments are expedited through reducing the number of errors on the part of county offices which require the suspension or correction of the application. Inability to supply needed audit personnel does not afford certifying officers the protection to which they are entitled. Collection of overpayment to a farmer not resulting from intentional falsification is an expensive function and often results in misunderstanding, loss of respect for the program, and discontinuance of the farmer's participation therein.

Based upon past experience, it is estimated that approximately 7.33 percent, or 304,342 applications will be unpaid as of June 30, 1947. These applications represent those returned by the General

Accounting Office for correction of errors or discrepancies, the addition of signatures or additional information which is necessary in order that they may be certified for payment. The producers who submitted these applications could be paid sooner and the additional work involved in their return to and recheck by the General Accounting Office could be avoided by having a larger proportion of the applications given a preliminary check by audit clerks in the State Office.

An increase of $964,767 for additional assistance for developing and carrying out the most effective conservation program consistent with needs (through county associations).

Since conservation needs vary widely in different areas the farmer committeemen in an area know best the needs of that particular area and are best qualified to assist farmers in selecting conservation practices which will best meet the local requirements. The emphasis, therefore, will be placed on administration through elected farmer committeemen.

The proposed plan of operation is primarily to give the farmer committeemen and the local farmers more authority in the development and administration of the agricultural conservation program and in determining how the available funds are to be used in obtaining the maximum amount of conservation. It is proposed to accomplish this through a county conservation allotment system whereby funds will be allocated to individual counties. County and community committeemen will assist the farmers in determining the farming practices which will best assure rebuilding depleted soils. This will involve formulating a balanced county agricultural conservation program, developing individual conservation practice plans for each farmer, contacting individual farmers to plan conservation practices, and furnishing technical guidance and information on the application of such practices. It is the objective of this plan of operation to put the greatest possible emphasis on those conservation practices which are the most essential in each individual county and to attain the maximum amount of conservation with the funds available.

Under the former plan of operation the farm allowance was based upon a rigid formula using such factors as the acreages of cropland, orchard land, vegetable land, and grazing land on the farm. This method had the effect of setting up identical amounts for identical-sized units with insufficient regard to the conservation needs. The new method of determining allowances is based mainly upon conservation needs and less consideration is given to the primary factors used under the old formula.

An increase of $379,500 for making acreage measurements on all tobacco farms where marketing quotas are in effect.

County Agricultural Conservation Associations

The Second Deficiency Appropriation Act, 1945, approved July 5, 1945, provided $408,000 for the measurement of the 1945 burley

tobacco acreages during the fiscal year 1946. In the discussion of this item before the Senate Subcommittee of the Committee on Appropriations, it was indicated that tobacco acreages should be measured every year to determine that producers are within their quotas.

As directed by Public Law 163, 79th Congress, approved July 28, 1945, the Secretary of Agriculture proclaimed marketing quotas on fire-cured and dark air-cured tobacco for the marketing year beginning October 1, 1946. It is, therefore, proposed to measure tobacco acreage on all farms producing burley, flue-cured, fire-cured, and dark air-cured tobacco during the fiscal year 1947.

An increase of $1,709,334 for continuing adequate assistance to farmers in meeting problems of postwar agriculture, including marketing and transportation difficulties, and emergencies resulting from floods, droughts, hurricanes, etc.

National and State Offices, $352,624: During the war, aside from administering the regular conservation programs, national, State, and county goals were developed for the production of crops needed to meet wartime demands. Because farmers were operating under acute shortages of manpower, machinery, materials, and facilities, the national and State offices directed the efforts of county committees to assist farmers in every way possible to gear production to meet the wartime demands by assisting them to obtain machinery, equipment, fertilizer, and other materials and services essential to attaining the production goals.

The period of transition from a wartime to a peacetime agriculture will be a difficult period for the farmers. Adjustments in farming practices will be necessary. Farmers must replenish the fertility of the soil drained by the all-out production for wartime needs, and carry out those practices which look toward long-range conservation and an economic level of continuous agricultural production. Farmers are requesting increasing guidance in working out an orderly manner of reconversion to minimize loss of income by failure to reconvert in line with peacetime demands. Farmer fieldmen and other State Office employees will be required to provide AAA county and community committeemen with information, material, and training in connection with price support, loan and marketing programs, production adjustment programs, and those programs designed to make available to farmers equipment and facilities to rebuild land depleted of its fertility and, therefore, its economic productive capacity by the tremendous production goals of the war years.

Approved conservation practices carried out under the regular agricultural conservation program are designed to deal with normal conservation problems, but unforeseen difficulties

and emergencies arise from time to time for which the regular practices are not adequate, such as floods, droughts, insect infestation, and hurricanes. At such times it is necessary to take special measures and to provide and carry out special conservation measures to restore farm lands to a productive state and to insure continued production and adequate protection of the soil.

Assistance to farmers in the marketing of local surpluses either by helping them to obtain rail or truck transportation or by arranging for the processing of their crops in such a manner that they may be disposed of locally or shipped to other markets will have to be continued to insure a stable agricultural economy.

County Agricultural Conservation Associations, $1,356,710: During the war farmers were called upon to meet tremendous production goals of commodities needed in the war, many of which were highly soil-depleting. Farmers operated under acute shortages of manpower, equipment, materials and facilities. Local committeemen assisted in every way possible to aid farmers in obtaining the equipment and facilities essential to wartime production, and to advise them of the type of conservation practice to perform which would maintain soil fertility and at the same time increase yields.

Farmers are now faced with the problem of converting farming operations to produce those agricultural commodities required for the peacetime demand of domestic and foreign markets. They are also faced with the problem of rebuilding a land depleted of its fertility by the tremendous production goals of the war years. They will need assistance in obtaining much-needed equipment and facilities and advice on the type of conservation practices to carry out.

Over a period of years county and community committeemen have been one of the most effective means of reaching the individual farmers. Their practical farmer experience and thinking and their knowledge of local conditions enables them to influence their farmer neighbors to adopt conservation practices to a greater extent than by any other means. In order to promote an orderly and efficient transition to peacetime production in line with postwar demands on agriculture, additional time of county committees will be required in advising farmers on all phases of price support, loan and marketing programs, and production adjustment programs. Emphasis on conservation farming will be increased by an orderly adjustment of agricultural production to peacetime demands. County personnel will devote more of their time to developing a balanced and locally well adapted conservation program in the counties and will assist farmers to adjust their operations to the requirements of the reconversion period.

Many of the special services to farmers performed under "Salaries and Expenses, War Food Administration" will now be performed in conjunction with the regular agricultural conservation program. Farmers have come to rely on the county offices for help and guidance in connection with the many problems of agriculture. It is believed the use of county committees, with their personal contacts with individual farmers, through farm visits or at county and community meetings, is the best means of helping farmers through the reconversion period to adjust farm production and to perform conservation practices which will result in a stable economy for postwar agriculture. County and community committeemen are often called upon to assist farmers on problems arising from emergencies such as floods, drought, insect infestation, and hurricanes. They assist farmers in obtaining the type of machinery required to handle soil or crops under post-flood conditions, provide and assist farmers in carrying out special conservation measures for flooded areas, assist farmers in combating local or widespread infestations of insects or other parasites by assisting them to obtain insecticides or in the application of such insecticides or assist in carrying out special practices for control of insects, etc.

County and community committeemen are often called upon to assist in disposing of local surpluses either by obtaining truck or rail transportation or by processing crops in such a manner that they may be used locally or shipped to other markets.

A decrease of $250,000 in connection with the elimination of the 1945 flax program (as previously discussed) composed of $50,000 for State office administrative expenses and $200,000 for expenses of the county agricultural conservation associations.

CHANGES IN LANGUAGE

The estimates include proposed changes in the language of this item as follows (new language underscored, deleted matter enclosed in brackets):

Change No.

For all expenses necessary to enable the Secretary to carry into effect the provisions of sections 7 to 17, inclusive, of the Soil Conservation and Domestic Allotment Act, approved February 29, 1936, as amended (16 U.S.C. 590g-590q), and the provisions of the Agricultural Adjustment Act of 1938, as amended (7 U.S.C. 1281-1407) (except the provisions of sections 201, 202, 303, 381, and 383 and the provisions of titles IV and V), including personal services in the District of Columbia and elsewhere; not to exceed $6,000 for the preparation and display of

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exhibits, including such displays at State, interstate, and international fairs within the United States; purchase
1 of lawbooks, books of reference, periodicals; [$300,000,000, together with $13,000,000 of the unobligated balance of the appropriation "Parity payments" in the Department of Agriculture Appropriation Act, 1944, in all $313,000,000] $257,500,000 to remain available until December 31, [1946] 1947, for compliance with programs under said provisions of the Agricultural Adjustment Act of 1938, as amended, and the Act of February 29, 1936, as amended, pursuant to the provisions of the [1945] 1946 programs carried out during the period July 1, [1944] 1945, to December 31, [1945] 1946, inclusive, and, in addition, $12,500,000 for making additional payments on an acreage and pound basis for harvesting seeds of grasses and legumes determined by the [War Food Administrator] Secretary to be necessary for
2 an adequate supply of such seeds [and $29,750,000 for making payments pursuant to section 5 of the Act of
3 December 23, 1944 (Public Law 551)]; in all, $270,000,000:
4 Provided, That not to exceed [$22,911,200] $28,341,098 of the total sum provided under this head shall be available during the current fiscal year, for salaries and other administrative expenses for carrying out such pro-
5 grams, the cost of aerial photographs, however, not to be charged to such limitation; but not more than [$6,382,103]
6 $7,886,480 shall be transferred to the appropriation
7 account, "Administrative expenses, [Agricultural Adjustment Agency] section 392, Agricultural Adjustment Act of 1938": Provided further, That none of the funds herein appropriated or made available for the functions assigned to the Agricultural Adjustment Agency pursuant to the Executive Order (No. 9069) of February 23, 1942, shall be used to pay the salaries or expenses of any regional information employees or any State or county information employees, but this shall not preclude the answering of inquiries or supplying of information to individual farmers: Provided further, That such amount shall be available for salaries and other administrative expenses in connection with the formulation and administration of
8 the [1946] 1947 programs (so long as such administrative expenses do not relate to programs exceeding $300,000,000, including administration) of soil-building practices and soil- and water-conservation practices, under the Act of February 29, 1936, as amended, and programs under the Agricultural Adjustment Act of 1938, as amended [, the total expenditures of which, including administration, shall not exceed $300,000,000]; but the payments or grants under such program shall be conditioned upon the utilization of land with respect to which such payments or grants are to be made, in conformity with farming practices

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which will encourage and provide for soil-building and soil- and water-conserving practices in the most practical and effective manner and adapted to conditions in the several States, as determined and approved by the State
9 agricultural conservation committee [of the Agricultural
10 Adjustment Agency] for the respective States: [Provided further, That no part of such amounts shall be available after the end of the current fiscal year for salaries and other administrative expenses except for payment of obligations therefor incurred prior to the end of such year:] Provided further, That the Secretary, may, in his discretion, from time to time transfer to the General Accounting Office such sums as may be necessary to pay administrative expenses of the General Accounting Office in auditing payments under this item: Provided further, That such amount shall be available for the purchase of seeds, fertilizers, lime, trees, or any other farming materials, or any soil-terracing services, and making grants thereof to agricultural producers to aid them in carrying out farming practices approved by the Secretary in the [1945,] 1946, [and] 1947, and 1948 programs under said Act of February 29, 1936, as amended: Provided further, That no part of any funds available to the Department [of Agriculture, the War Food Administration], or any bureau, office, corporation, or other agency constituting a part of such Department [or Administration] shall be used in the current fiscal year for the payment of salary or travel expenses of any person who has been convicted of violating the Act entitled "An Act to prevent pernicious political activities", approved August 2, 1939, as amended, or who has been found in accordance with the provisions of section 6 of the Act of July 11, 1919 (18 U.S.C. 201), to have violated or attempted to violate such section which prohibits the use of Federal appropriations for the payment of personal services or other expenses designed to influence in any manner a Member of Congress to favor or oppose any legislation or appropriation by Congress except upon request of any Member or through
11 the proper official channels [: Provided further, That none of the funds appropriated in this Act for the War Food Administration or any of its constituent agencies shall be paid out for the salary, per diem allowance, or expenses of any person after it is determined by the War Food Administrator that such person has, personally or by letter, demanded that a farmer join the triple-A program as a condition of draft deferment or for the granting of a priority certificate for any rationed article or commodity. Hearings on charges filed with the War Food Administrator shall be held and decision made within thirty days after such charges are filed with him].

Change No.

12. [For an additional amount for conservation and use of agricultural land resources, fiscal year 1946, for compliance with programs under the Agricultural Adjustment Act of 1938, as amended, including the measurement of burley tobacco acreages, to be consolidated with the sum of $22,911,200 made available for salaries and other administrative expenses under this head in the Department of Agriculture Appropriation Act, 1946, $408,000].

Other than the usual changes in year dates applicable to the programs covered by the appropriation and the period of availability thereof and the elimination of all reference to the War Food Administration, the estimates include proposed changes in the language of this item as follows:

Change No. 1 deletes the language "$300,000,000, together with $13,000,000 of the unobligated balance of the appropriation "Parity payments in the Department of Agriculture Appropriation Act, 1944, in all, $313,000,000" and inserts in lieu thereof "$257,500,000." No reappropriation of funds is contemplated in the 1947 estimates.

Change No. 2 deletes the language appropriating an additional $29,750,000 for making payments to encourage the production of flax in the 1945 crop year pursuant to section 5 of Public Law 551 approved December 23, 1944. This is a nonrecurring item in the 1945 program and no authoritzation is provided for such payments in the 1946 program.

Change No. 3 inserts "in all, $270,000,000". The direct appropriation of $257,500,000 for the regular agricultural conservation program and an additional appropriation of $12,500,000 for making additional payments on an acreage and pound basis for harvesting critically-needed seeds of grasses and legumes provides a total of $270,000,000 for carrying out the 1946 agricultural conservation program.

Change No. 4 deletes "$22,911,200" and substitutes therefor "$28,341,098" as the amount of the appropriation which may be used for administrative expenses, including expenses of county agricultural conservation associations.

[Note.— The amount of $22,911,200 does not include $408,000 provided in the Second Deficiency Appropriation Act, 1945, for measuring burley tobacco acreage and $953,169 to cover the cost of Public Law 106.]

Change No. 5 inserts the language "the cost of aerial photographs, however, not to be charged to such limitation." Aerial photographs are used to determine the areas of fields in farms participating in the program and in determining performance. The language will permit aerial photography expense to be excluded from the limitation on administrative expenses.

Change No. 6 deletes "$6,382,103" and inserts "$7,886,480" as the maximum amount which shall be transferred to the appropriation account "Administrative expenses, section 392, Agricultural Adjustment Act of 1938" for administrative expenses in carrying out the programs formulated under sections 7 to 17, inclusive, of the Act of February 29, 1936, as amended, and the Agricultural Adjustment Act of 1938, as amended.

Change No. 7 deletes "Agricultural Adjustment Agency" and inserts "section 392, Agricultural Adjustment Act of 1938" inasmuch as the authority to establish an appropriation account for administrative expenses is contained in section 392 of the Agricultural Adjustment Act of 1938, as amended.

Change No. 8 inserts in parentheses the language "so long as such administrative expenses do not relate to programs exceeding $300,000,000 including administration" and deletes the language", the total expenditures of which, including administration, shall not exceed $300,000,000". The language inserted is solely for the purpose of making clear the fact that administrative expense funds provided for the fiscal year 1947 can be used in connection with the formulation and administration of 1947 programs only so long as such programs do not exceed $300,000,000 including administration.

As brought out in the hearings before the House Appropriations Subcommittee on the Department of Agriculture Appropriation Bill, 1946 (Page 376, Part 2) the question was raised by the Chairman as to whether the language proposed to be deleted specifically limiting the amount of the subsequent year's program might not be held to be legislative in character in tha t it may not constitute a limitation on funds in the bill in which it was carried. Since the appropriation for the 1947 programs will be carried in the 1948 appropriation act rather than in the 1947 fiscal year appropriation act, it is believed that the deleted language would be legislative in character if retained in the 1947 estimates.

Change No. 9 inserts the words "agricultural conservation" before the word "committee" and deleted the words "of the Agricultural Adjustment Agency". The Agricultural Adjustment Agency is now the Field Service Branch of the Production and Marketing Administration.

Change No. 10 deletes the language "That no part of such amount shall be available after the end of the current fiscal year for salaries and other administrative expenses except for the payment

of obligations therefor incurred prior to the end of such year:". This language is unnecessary inasmuch as it is contained elsewhere in the item.

Change No. 11 deletes the proviso which prohibits the use of appropriated funds to pay the salary or expenses of any employee of the Department who has been found to have demanded personally or by letter that a farmer join the triple-A program as a condition of draft deferment or for the granting of a priority certificate for any rationed article or commodity. This language is now obsolete and serves no purpose. No supervision is exercised over draft deferment and no articles of farm machinery are now rationed.

Change No. 12 deletes language contained in the Second Deficiency Appropriation Act, 1945, appropriating an additional amount of $408,000 for the fiscal year 1946, for checking compliance, including the measurement of burley tobacco acreages.

WORK UNDER THIS APPROPRIATION

Objective: To carry out the policy of the Congress as set forth in the Soil Conservation and Domestic Allotment Act, as amended, and in the Agricultural Adjustment Act of 1938, as amended, by making assistance available to farmers in every agricultural community in the United States, Puerto Rico, Hawaii, and Alaska by extending practical assistance to farmers in their efforts to conserve and restore, in the national public interest, the nation's farm and ranch land resources through the use of farming practices which will reduce soil erosion caused by wind and water, maintain and improve soil productivity and conserve water for agricultural use.

The General Problem and its Significance:

Soil and Water Conservation

Until recent years no general attempt was made to maintain soil fertility. It was considered simpler, and in many cases more profitable, and just as conductive to a high standard of living, to utilize the stored-up soil fertility. Early land policies encouraged exploitation of soil resources. Land was plentiful, and when that in use became depleted of its fertility the farmers moved to new lands. The exploitation of soil resources was intensified by the effects of World War I and World War II. This is illustrated by the fact that the combined acreage of corn and soybeans - two major soil depleting crops - increased in ten North Central States from 50,355,000 acres in 1940 to 67,153,000 acres in 1944. Farmers practically doubled the acreage of peanuts grown in nine Southern States between 1940 and 1944.

The losses in soil productivity may be illustrated by studies in Ohio which show that soils cropped in the usual manner from 50 to 75 years show a decrease in fertility of 35 percent. Farm lands in Missouri have lost a third of their original productiveness through 60 years of cropping. There are lands in Kansas where 30 years of farming has lowered productivity 25 percent.

Aside from the growing urgency to replenish soil productivity, farmers and the rest of the nation have an interest in soil conservation as a means of obtaining maximum production with minimum effort and expenditure of funds. Better care of our soil means more efficient production for farmers, improved quality of food and fiber for the nation, at less cost to consumers. Soils of low fertility not only produce low yields but foods that are deficient in food nutriments for both men and animals. The application of mineral fertilizers and lime to the soils permits the growing of higher quality crops and reduces the danger of mineral deficiency diseases among men and animals.

It is a well known fact that 50 million acres of cropland in the United States have been ruined by erosion, another 50 million acres have been damaged severely, while other large areas are eroding to a greater or less degree. Erosion has seriously affected every major

agricultural region. Erosion experiments at the Missouri State Experiment Station show, over a period of many years, a loss of surface soil on land continuously cropped to corn of 20 tons per acre annually. Continuous cropping to wheat lost 10 tons per acre annually while a plot of continuous sod has lost less than one ton. Where these crops were in a rotation of corn, wheat, and clover, it might be expected that the annual erosion loss would be one-third of the 30 or 10 tons, but instead the measured loss has been 2.7 tons per acre per year. Experiments in other States show similar results and show the importance of growing soil conserving crops in rotation with the cultivated crops as an erosion measure. The Field Service Branch (formerly Agricultural Adjustment Agency) of the Production and Marketing Administration stresses the use of phosphate, potash and lime in crop rotations which promote the heavy growth of soil-conserving crops as well as mechanical practices which reduce erosion.

Every year large sums are appropriated to alleviate the effect of disastrous floods or to clear channels in rivers and streams clogged with soil washed from the nation's farms. The widespread application of such soil conservation practices as terracing, contour farming, stripcropping, planting of cover crops and forest trees, establishing and maintaining good stands of grasses and legumes on pasture and range land on the farms and ranches would reduce the damage from floods. Responsibility for the conservation of our soil and the control of floods extends beyond individual ownership. The conservation of soil and water resources and of range and forest resources is a national problem, the solution of which is beyond the ability of the individual farm operator or owner to accomplish without competently directed group action.

Studies made by the Field Service Branch show that the national needs for conservation practices are very much greater than the extent to which farmers are performing them. A summary of the agricultural lime needs based on estimates by agronomists of the Land-Grant Colleges indicates a total annual limestone requirement of more than 50 million tons. This compares with 3,461,000 tons used by farmers in 1935 before the inauguration of the Agricultural Conservation Program and 23,937,000 tons under the Agricultural Conservation Program in 1944.

The Forest Service estimates that in the interest of better land use 13 million acres of submarginal cropland should be planted to trees; that 9.6 million acres of poor pasture or abandoned farm land should be planted to trees; that 18 million acres of farm woodlands need replanting, and that 3 million acres of shelter belts are needed.

In order to have some guides, or goals, to determine the extent of some of the conservation problems in the United States the State Committee in each State was requested to submit the best figures available on the amount of each soil and water conservation practice which should be carried out in the State. In arriving at the needs figure for each practice the State Committee was requested to work closely with the State Technical Committee and specialists at

Land-Grant Colleges and Experiment Stations as well as other agricultural leaders and workers. In most instances the State Committees obtained similar information from the county committees before completing the State figures. A national needs figure was thus obtained from a sum of the State reports for each practice. These needs figures are preliminary and subject to revision as additional information becomes available. The following table shows a comparison between the total estimated needs for a number of practices and the extent of the practice performed under the 1944 program:

A Statement of Some Needed
National Soil Conservation Practices

Practice	Unit	Total Need	Preliminary 1944 Extent
Terracing	acre	79,604,800	1,140,000
Establishing sod waterways on cropland	acre	4,921,000	12,000
Dams and ponds for livestock water	cu.yd.	1,457,537,300	126,908,801
Eradication of perennial noxious weeds by:			
Mechanical means	acre	11,042,800	953,483
By use of chemicals	lbs.	523,553,500	15,303,128
Establishing kudzu or perennial lespedeza	acre	5,394,400	82,313
Establishing contour stripcropping	acre	40,094,087	297,295
Application of 20% superphosphate to:			
Permanent pastures, hay, green manure, cover and new seedings	tons	13,203,300	1,912,835
Field stripcropping (non-contour)	acre	27,551,100	6,029,969
Seeding or reseeding permanent pastures	acre	83,549,400	4,499,259
Legume and nonlegume green manure and cover crops	acre	89,444,000	23,160,551
Contouring intertilled crops	acre	58,556,300	13,392,795
Contouring drilled crops	acre	32,205,000	4,848,657
Protecting summerfallow	acre	22,451,100	11,941,213
Grazing management	acre	356,500,000	77,353,454
Deferred grazing non-crop pasture and range	acre	37,548,700	5,756,979

Some practices such as terracing, livestock dams and ponds, and establishing sod waterways, except for annual maintenance, are permanent structures and do not need to be repeated. Other practices such as application of lime or phosphate, green manuring and protecting summerfallow are recurring practices and must be repeated periodically.

In 1944, and again in 1945, it is estimated that 4,000,000 farmers have received assistance in carrying out conservation practices under the provisions of the Agricultural Conservation program. Every effort is being made to increase the participation in the conservation phases of the program from year to year. Soil management is in the hands of the millions of land owners and operators. If the soil and water resources are to be conserved with maximum effectiveness, conservation farming will have to be adopted on all of the approximately 6,000,000 farms in the United States. There is need to increase the number and extent of performance of conservation practices on many farms which are now carrying out some of the practices. This is not only a slow process, but the economic obstacles which farmers encounter in applying conservation measures are often difficult to overcome. Abrupt changes are impractical. Experience shows that the best results are obtained by encouraging farmers to begin in a small way and to expand into an overall conservation farming system. Most farmers will make such changes only if outside financial assistance is given. Conservation farming should eventually become a part of each farm operator's management plan and be a part of any program of production adjustment and other farm programs.

Food and Fiber Production

Farmers in 1943, and again in 1944, surpassed all previous records for total food production. Goals for 1945 production were set and remain at maximum levels. This high farm production, particularly in "war" commodities such as flaxseed, soybeans, peanuts, eggs, dairy products, and meat was the result of a carefully planned program judiciously carried out. Production goals based on over-all requirements were set and were carefully followed by farmers during each of the last four years. Farmer committeemen in every agricultural community served to translate the goals into production guides for individual farms, to discuss the goals, the reasons for them, and their importance to wartime production with each of their neighbors. It would have been impossible for 6 million farmers to make independent decisions which would have produced such a balanced output of needed commodities. Equally as careful planning will be needed in 1946 in the development of production goals and conservation measures and in the practical administration of conservation measures and production programs.

The food production job for next year will be as important as it was in 1945. Some individual crop adjustments will be needed. Consumers will want more of certain kinds of food next year than they used in the 1945 crop year. Farmers will want to grow the right proportions of different crops, within a carefully balanced and adjusted pattern of national production.

Each year national and State production goals are established for important crops and livestock products. These goals are to indicate the adjustments and levels of production needed. From time to time, various price support programs and other programs are announced to help attain these goals. It is the responsibility of the

Field Service Branch to carry this story to individual farmers, to promote by whatever means are feasible, the attainment of these goals, and to explain to farmers, the activities planned by the Department to assist them in reaching such goals.

Tobacco Marketing Quotas

In a resolution approved March 31, 1944, the Congress provided for extension of marketing quotas to the 1945 and 1946 crops of burley and flue-cured tobacco without regard to the reserve supply in order to have more acreage available for essential food production. Growers of both burley and flue-cured tobacco voted in favor of marketing quotas for three years in referenda held in 1943. This program is administered by the Field Service Branch in communities in which burley and flue-cured tobacco are grown.

In administering the tobacco marketing quotas program in 1946, community committees will establish an acreage allotment and normal yield for each individual farm producing these kinds of tobacco, notify producers of such allotments, determine acreage actually planted on each farm, estimate the production on each farm where the acreage harvested is in excess of the allotted acreage, issue to the operator of each farm growing these kinds of tobacco a card to be used in identifying the tobacco marketed from the farm, and review the marketings from each farm.

Under the 1943 and 1944 marketing quota programs, growers themselves reported planted acreages and County Agricultural Association committees reviewed these reports, check measuring a limited number of farms. Although the results obtained under this plan generally were satisfactory, it was felt that successful operation of the marketing quota program required that acreages planted to these kinds of tobacco on all farms be measured by community committeemen. On July 5, 1945, the Congress provided additional funds for measuring acreages of burley tobacco on all farms in 1945. Since harvesting the flue-cured crop was substantially completed at that time, and reports and check measurements were completed for practically all farms, it was not deemed advisable for committeemen to measure flue-cured acreages in 1945. There were approximately 272,000 farms growing burley tobacco in 1945 and approximately 195,000 farms growing flue-cured tobacco.

Public Law 163, 79th Congress, approved July 28, 1945, directed the Secretary of Agriculture to proclaim marketing quotas on fire-cured and dark air-cured tobacco for the marketing years 1946-47, 1947-48, and 1948-49 without regard to the present supply or the reserve supply level. In a referendum held October 20, 1945, a total of 17,090 dark air-cured tobacco growers, or 97.8 percent of those voting, favored quotas, and 388, or 2.2 percent, opposed quotas. At the same time a total of 12,070 growers of fire-cured tobacco, or 93.7 percent of those voting, favored quotas, while 817, or 6.3 percent, opposed quotas.

The law provides that individual acreage allotments for 1946 shall be the same as were established for 1943, the last year for which marketing quotas were established. In addition, the law sets aside specific acreages for county committees to use to adjust 1943 allotments found to be inequitable and to establish allotments for "new farms" on which no dark air-cured or fire-cured tobacco has been grown within the past five years.

In 1943, the last year for which fire-cured or dark air-cured acreage allotments were established, there were approximately 34,000 individual farms having fire-cured acreage allotments, and approximately 21,000 individual farms having dark air-cured tobacco allotments. It is estimated that the number of farms for which acreage allotments will have to be established in 1946 will be approximately 36,000 in the case of fire-cured tobacco, and approximately 24,000 in the case of dark air-cured tobacco. During the latter years of the war, prices for both fire-cured and dark air-cured tobacco have been considerably above pre-war levels. For this reason, a large number of farms which previously produced none of these kinds of tobacco have begun growing one or both. Further, the fact that 1945 and 1946 loan rates on these kinds of tobacco will be considerably higher than under the previous marketing quota program will increase substantially requests for "new farm" allotments, for adjustments in 1943 allotments, and for allotments for those farms which have grown these kinds of tobacco in 1943, 1944, or 1945, but did not have an allotment in 1943.

General Plan of Work: The work carried on under this appropriation consists of (1) developing and administering a national agricultural conservation program which offers assistance in conservation to the farmers in every community in the United States; (2) developing and giving guidance to national agricultural production in order to more nearly meet the national needs for food and fiber under rapidly changing conditions; and (3) administering marketing quotas on burley, flue-cured, fire-cured and dark air-cured tobacco.

The administrative organization for carrying out the program, as provided by the Soil Conservation and Domestic Allotment Act, as amended, consists of a community committee of farmers elected annually from among their number and a county committee composed of three farmers who are elected by the delegates from each of the communities. In each State there is a State Committee of farmers who are appointed by the Secretary of Agriculture. The various State Committees are supervised by a national office which is divided into five administrative regional divisions.

The conservation program during the war years was developed to emphasize those practices which resulted in the greatest immediate increases in production of agricultural commodities. Farmers were encouraged to make the best use of farm and ranch resources by adjusting the production of agricultural commodities to meet military, civilian, and export requirements. They were assisted in marketing agricultural commodities by encouraging an orderly, adequate and balanced flow of commodities through loans and price supports,

reserve supplies, and marketing quotas. Agricultural income was improved through loans, price supports and through assistance in carrying out practices which increased yields, increased the efficiency of production of farm commodities, and kept to a minimum the drain on soil fertility and soil losses due to erosion.

The 1946 Program: Such assistance will continue to be given to farmers. However, the 1946 agricultural conservation program will not emphasize only those conservation practices resulting in immediate increases in production of those commodities of which increases are needed, but those which will:

1. Maintain or increase soil fertility,

2. Control and prevent erosion caused by wind or water,

3. Encourage conservation and better agricultural use of water, and

4. Conserve and increase range and pasture forage.

Farmers are urged to use their own initiative and managerial ability in making arrangements to perform their conservation practices and are encouraged to use the most practical means available to them. Some of them do the work with their own power, equipment, labor and materials, some arrange to have their neighbors do it, and others hire contractors and private engineers in the community to perform the practices. Some farmers obtain assistance from public agencies in performing the practices.

Public assistance provides only a part of the cost of the conservation program. The farmers themselves share in the expense. The plans for the 1946 program provide that the farmer contribute a greater share of the cost of performing a number of the practices than has been the case in previous programs.

Farmers are being asked and assisted to perform conservation practices at a scale never before attained. Since it is difficult in most cases for the farmer himself to finance the purchase of necessary materials or services, two of the three following methods of assistance are designed to overcome this deterrent to participation:

1. The "Purchase Order Plan". Purchase orders are issued to the farmer by the county committee and carry a value equivalent to the rate of payment established by the Field Service Branch for performing the practice. Presented by the farmer to any dealer or contractor of the farmer's choice who supplies materials and services, together with cash representing the farmer's own share of the cost of the practice, the purchase order makes available immediately the Federal Government's share of the cost and increases business in the regular channels of trade. Dealers are subsequently reimbursed by the Field Service Branch to the extent of the value of the purchase orders.

2. The "Contract Plan" is a plan under which the Field Service Branch contracts with suppliers to furnish materials and services to the farmer on order from the county agricultural conservation association. Under this plan the farmer pays his share of the cost of the materials or services to the county agricultural conservation association at the time of placing the order, or to dealer or contractor at the time of delivery.

3. The "Cash Payment Plan." Under this plan of assistance which is the one used in connection with the greatest number of practices, a cash payment is made to the farmer at established rates for the performance of the specific practices carried out.

Since the funds for assisting farmers in conservation work are limited it is necessary to budget the amount of assistance which will be available to each State. This apportionment of funds will be based on acreage of cropland, acreage of improved pasture, acreage of range and unimproved pasture land, acreage of orchards and acreage of farm woodlands, plus a consideration for conservation needs. Flexibility will be permitted in apportioning assistance to individual farms in order to recognize local differences in conservation problems.

Recommendations for changes in the conservation program from year to year are requested from community, county and State Committees. These committees are encouraged to consult with specialists at the Land-Grant College and other technicians in developing these recommendations. On the basis of these suggestions the national policies are established and the general outline of the program is developed.

It is the general policy to make assistance available for only a part of the cost of carrying out conservation practices. One of the objectives of the program for each State is to refrain from including in the program those practices which farmers are now carrying out quite generally and which are considered routine farming practices. Stated another way, the Field Service Branch tries to use the money available for each State in such a way that it will encourage the maximum increase in needed conservation practices.

Prior to the beginning of the crop year farmers discuss their farm plans with county and community committeemen. This involves a discussion of the conservation needs of the farm and the practices which are to be performed during the year as well as the crops and livestock which will be grown on the farm. As a result of this discussion adjustments in the original plans may be made which will bring about more conservation and greater production of those crops and livestock in greatest demand.

The Field Service Branch will continue to cooperate with other agencies in the interest of increased conservation of farm and range land and in making production programs more effective.

Representatives of the Farm Security Administration, Farm Credit Administration, and other lending agencies will be encouraged to provide loans to further assist farmers to carry out conservation practices.

Farmers in Soil Conservation Districts who have farm conservation plans will continue to be encouraged to use the assistance available through this Branch in carrying out the practices called for in the plans. Farmers who receive technical assistance from the Soil Conservation Service, Extension Service, and other agencies in connection with practices also receive financial assistance under the Agricultural Conservation Program in carrying out the practices.

Care is used in the development of practice specifications to see that they are in keeping with the State Experiment Station recommendations.

The State Director of Extension is an ex-officio member of the State Committee and the county agent is an ex-officio member of the County committee, and in some cases the county agent is the secretary.

Teachers of Vocational Agriculture have given invaluable service in the development of conservation farming programs.

Current Program: Each year the volume of conservation practices carried out on farms and ranches in every community in the nation has increased. In 1944 there were about 4,000,000 farms and ranches in the United States on which the operator or owner carried out conservation practices for which he received assistance under the Agricultural Conservation Program. This was the first program under which all funds appropriated were used to carry out conservation practices. The table below gives a comparison of some of the conservation practices carried out under the program in 1936 and 1944.

A Statement of Some Increases
in Practices, 1936 to 1944

Practice	Units	1936	(Preliminary) 1944
Application of Materials:			
Ground limestone (or equivalent)	tons	2,210,211	23,937,289
20% superphosphate (or equivalent)	tons	1,010,906	1,912,835
Green manure and cover crops . .	acres	13,687,327	23,160,551
New seedings of grasses and legumes	acres	30,297,051	1/ 1,601,509
Erosion Control and Pasture Improvement:			
Terracing	acres	728,591	1,140,000
Contour listing or furrowing	acres	1,292,776	10,322,102
Protecting summerfallow . .	acres	3,584,913	11,941,213
Contour farming intertilled crops and contour seeding on small grain crops.	acres	--	18,241,452
Stripcropping and strip-fallowing.	acres	--	6,029,969
Earthen dams and reservoirs	cu.yd.	5,230,151	126,908,801
Reseeding of Pastures and Range Land:			
Natural (by deferred grazing)	acres	36,847	5,756,979
Grazing management	acres	--	77,353,454
Artificial reseeding	1000 lb. seed	18,062	28,977

1/ Payments are no longer made for clover, alfalfa, and many common grasses.

A part of the record production attained during the war may be credited to fertility stored in our soils as a result of earlier conservation programs of crop adjustment and to conservation practices which farmers were encouraged to carry out prior to the war. Some of the increase is also reflected in per acre yields attained through the assistance given for conservation practices during the war years. During this war the Agricultural Conservation Program has stressed practices which give immediate increases in crop yields.

Despite labor and machinery shortages and other handicaps during World War II, the farmers in the United States have produced annually 50 percent more food than in World War I. United States citizens have had 10 percent more food per capita during the last war than in 1917-18 with 10 percent fewer workers on farms and with one-third greater national population. Twice as much food has gone to the armed services and for overseas shipments each year than during World War I.

Figures comparing one year during each of the two wars, show that wheat production in 1944 was 1,079 million bushels compared with 904 million bushels in 1918; corn, 3,228 million bushels compared with 2,441 million; beef and veal, 10,732 million pounds compared with 8,486 million; pork 12,893 million pounds compared with 8,349; chickens, 3,460 million pounds compared with 1,896 million; milk 119 billion pounds compared with 73 billion pounds; total fats and oils, 7,787 million pounds compared with 4,866 million.

The following tables show the 1945 crop and livestock goals compared with acreage and production data for previous years and 1945 indications:

(See next page)

1945 Crop Acreage Goals, with Comparisons

Commodity	1935-1939 Average	1945 Goal	1945 Indicated July 1	% State Goal is of 1935-1939	% State Goal is of 1945 Indicated
	(Planted Acreage (000)				
Food and Fiber Crops:					
Wheat (not planted except 1935-1939)	73,235	67,731	68,808	92	98
Rye 1/	3,699	2/ 2,515	2,096	68	120
Rice	1,007	1,405	1,511	140	93
Dry Beans	1,917	2,277	1,976	119	115
Dry Peas	281	2/ 457	533	163	86
Soybeans for Beans 1/	3,042	10,757	10,392	354	104
Flaxseed	1,938	5,000	4,149	258	121
Peanuts, grown alone	2,173	3,955	3,953	182	100
Peanuts, picked & threshed 1/	--	(3,230)	(3,154)	--	102
Cotton	28,496	20,507	18,355	72	112
Broomcorn	1/ 317	3/ 370	8/	117	--
Sugar Beets	892	951	780	107	122
Sugar Cane (except sirup) 1/	287	337	303	117	111
Potatoes	3,123	3,137	2,916	100	108
Sweet Potatoes	804	841	719	105	117
Truck crops: Fresh 1/	1,745	4/	8/ NA	96	--
Processing	1,479	4/7/ 2,155	8/ NA	146	--
Tobacco: 1/ Flue-cured	981	1,042.3	1,056	106	99
Burley	371	502.7	530	136	95
Other Domestic	292	257.8	236	88	109
Feed Crops:					
Corn	97,055	99,098	94,154	102	105
Oats	40,586	44,259	45,911	109	96
Barley	13,364	13,911	11,922	104	117
All Sorghums (except sirup)	15,029	17,155	16,048	114	107
Total, cultivated crops	292,113	300,304	--	103	--
Hay and Hay Seeds: 1/					
All tame hay	55,770	62,862	59,459	113	106
Hay seeds, legume 5/	2,735	4,899	8/	179	--
Cover crop seeds 6/	120	2/ 469	(May) 354	391	132
GRAND TOTAL (excluding hay seeds	348,003	363,635	--	104	--

1/ Harvested.
2/ Goal announced fall 1944.
3/ WFA suggested goal for Oklahoma included in total.
4/ Goals not established on a State basis. WFA suggested goals included in totals.
5/ Includes alfalfa, red alsike, sweet and ladine clover, and lespedeza.
6/ Includes hairy vetch, common and Willamette vetch, Austrian winter peas, crimson clover and common ryegrass.
7/ Minimum goal. Recent increase military needs necessitate revision up to maximum capacity.
8/ No official indication available.

LIVESTOCK GOALS: 1945 Numbers and Production
Recommended by States, with Comparisons

Livestock and Livestock Products	1935-39 Average	1945 Goal	Latest 1945 Indicated	% State Goal is of 1935-1939	% State Goal is of 1945 Indicated
	1,000	1,000	1,000		
Milk Cows on Farms (av. for yr)	23,548	26,363	4/	112	100
Milk Production on Farms (000 lb)	103,624	120,582	4/	116	--
Average Production per cow	4,400	4,574	4/	104	--
Hens and pullets on farms (January 1)	364,400	1/ 475,000	469,161	130	101
Egg production on farms (000 dozen)	3,032	1/ 4,350	4/	143	--
Chickens raised	664,400	1/ 745,800	4/	112	--
Broilers, Commercial	69,700	2/ 213,000	4/	306	--
Turkeys raised	27,000	2/ 35,666	39,481	132	90
Hogs: Sows to farrow in spring	6,817	9,569	8,204	140	117
Pigs saved, spring	41,872	3/ 57,563	51,687	137	111
Cattle and calves (Dec. 31)	66,684	77,306	4/	116	--
Beef Cattle on farms (First of year)	31,400	2/ 39,200	4/	--	--
Beef Cattle on farms (End of yr)	32,000	2/ 36,900	4/	--	--
Cattle & Calf slaughter (head)	24,600	2/ 35,000	4/	--	--
Sheep & Lambs on farms (Dec.31)	51,462	49,136	47,945	95	102
Sows to farrow in fall	4,306	5,837	5,548	136	105
Pigs saved, fall	26,767	37,000	35,300	138	105

1/ Revised from State recommendations in line with additional needs for eggs from 1945 production.
2/ Goals not established on a State basis. Used WFA suggested goals in computing percentages.
3/ State goal for sows to farrow in spring, times average number of pigs per litter in spring of 1944.
4/ No official indication available.

The plan for operating the 1946 Agricultural Conservation Program places a tremendous responsibility upon the county and community committeemen. It goes farther than any past program toward obtaining the greatest possible volume of sound soil-conserving and soil-building practices on farms in the country and in achieving the greatest amount of conservation with the funds available.

Under this plan each State Committee will divide the State allocation of funds for payment to farmers among counties, and will advise each county of the amount of funds available for payment of approved practices. The county committee will plan and administer a program within the limits of the county allocation.

The county committees, with the help of the community committees, will select from the State Handbook the practices which will be approved for payment in the county during 1946. Only those practices will be selected which are most urgently needed in the county and which, if completed by the farmer, will accomplish the greatest good for all farms in the county. In order that committeemen may concentrate their efforts on reaching this goal, the number of practices selected for the county must be limited. A member of the State Committee or its representative will attend each meeting where practices are selected to assist the county and community committees.

The community committeemen must be thoroughly familiar with the use and application of each practice selected for payment in the county. At farm plan sign-up time the committeemen will visit each farm where practicable, discuss the approved county practices with the owner, or with both landlord and tenant if possible, and make every effort to establish a sound soil-conserving plan for the farm. In recommending the practices or extent of practices for an individual farm the committeemen will not be bound by any minimum or maximum amount of payment. The acceptability or the extent of a practice will be judged on the soil-conserving needs of the particular farm in relation to other farms in the community or county. Farmers will not earn payment for the practices approved for the county unless the county committee has given prior approval for the performance of the particular practice on the farm, except for practices carried out prior to April 1, 1946, or the date on which the original notice of approval is mailed, whichever is the earlier.

After the farm plans have been completed and returned to the county office the county committee with the assistance of the community committeemen will review the 1946 intentions for all farms in the county and when necessary will adjust practices or extent of practices in a manner to coincide with the funds allocated to the county.

If approval is to be given to a portion of the farms in a county before farm plans for all farms are available, the county committee will set aside a reserve of the county funds to provide for approval of the farm plans subsequently received. Notice of approval of practices will be issued as early as possible and a copy of the notice of approval will be sent to all persons interested in the farm.

Farmers will be encouraged to report performance of practices as the practices are completed. Likewise, if it will not be possible for a farmer to perform a part or all of an approved practice he will be urged to report this information to the county committee as early as possible. County committeemen will periodically review performance for those practices which are seasonal or which will not be fully performed due to weather conditions. The county committee may approve substitutions or adjustments of approved practices at any time an individual farmer will be unable to complete all of his approved practices. If the county committee does not see fit to approve substitute practices for a particular farm, the amount of the unearned portion may be transferred to other farms in the county. However, the amount of the originally approved practice for the farm will in no event be reduced below the amount actually completed on the farm according to specifications.

(b) Parity Payments

This budget schedule covers the amount transferred in the fiscal year 1945 to the appropriation account "Administrative expenses, Section 392, Agricultural Adjustment Act of 1938", the amount reappropriated to the appropriation "Conservation and use of agricultural land resources" in 1946 and the amount of the unobligated balance of the appropriation made in the 1944 Agricultural Appropriation Act for parity payments.

(c) Administrative Expenses, Section 392 Agricultural Adjustment Act of 1938

This appropriation account for State and national expenses of the Agricultural Adjustment Agency (now the Field Service Branch of the Production and Marketing Administration) has been established pursuant to section 392 of the Agricultural Adjustment Act of 1938, as amended (7 U.S.C. 1281-1407) which provides that the Secretary of the Treasury is authorized and directed upon the request of the Secretary to establish one or more appropriation accounts into which there shall be transferred from the respective funds available for the purposes of the several acts in connection with which the personnel or other facilities of the Agricultural Adjustment Agency are utilized proportionate amounts estimated by the Secretary to be required for administrative expenses in carrying out, or cooperating in carrying out, any of the provisions of the respective acts.

The amounts transferred into this appropriation account are within the limitations established for administrative expenses under the respective appropriations from which such transfers were made.

Transfers, 1946, as shown below		$10,878,621
Transfers, 1947, as shown below		10,137,235
Changes in transfers for 1947:		
Overtime decrease ..	210,039	
Other decrease	531,347	-741,386

STATEMENT OF SOURCES, PURPOSES, AND AMOUNT OF FUNDS TRANSFERRED
(as shown in Budget Schedules)

Purpose for which funds are transferred to this account:	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
Conservation and Use of Agricultural Land Resources - for administration of agricultural conservation program	$6,850,113	$7,191,006	$7,886,480	+$695,474
Parity Payments - for administration of parity payments program	237,795	- -	- -	- -
Sugar Act - for administration of sugar payments program	540,801	607,714	612,809	+5,095
Crop insurance act - for administration of crop insurance program	246,917	780,288	789,900	+9,612
Commodity Credit Corporation - for moisture content and grade determinations on loan collateral	86,545	725,068	731,082	+6,014

(Continued on next page)

Purpose for which funds are transferred to this account	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
War Food Administration, salaries and expenses - for special services in connection with emergency food programs	$1,295,940	$1,035,294	- -	-$1,035,294
Commodity Credit Corporation - for administration of beef production, sheep and lamb production, and canners' certification programs	$27,327	$224,325	- -	-224,325
Reimbursement for services performed	118,677	104,887	$116,964	+12,077
Transferred to "Salaries and Expenses, Office of Information"	-5,600	- -	- -	- -
Covered into Treasury as miscellaneous receipts, Public Law 529	-18,353	- -	- -	- -
Overtime costs (on all above items)	1,446,723	210,039	- -	-210,039
Total obligations	10,826,885	10,878,621	10,137,235	-741,386

WORK UNDER THIS ACCOUNT

(Financed by Transfers as shown above and in the Budget Schedules)

The activities of the Field Service Branch are carried out under the supervision and control of the Director, Field Service Branch, who is charged with the national responsibility for the administration of the programs. In the States, under law, the administrative responsibilities are placed with farmers through State Committees.

State Committees are composed of not less than three or more than five farmers who are residents of the State and who are appointed by the Secretary of Agriculture to administer the programs in the State with the aid of county and community committees, and of farmer fieldmen who serve as the necessary connecting link between the State and county committees.

The State Director of Extension is an ex-officio member of the committee.

The forty-eight States are grouped into five regions. Each region is administered by a regional director with supervisory responsibilities over the programs and work of the committees within the region. States comprising each region are:

Northeast: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island and Vermont.

East Central: Delaware, Kentucky, Maryland, North Carolina, Tennessee, Virginia, and West Virginia.

Southern: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, Oklahoma, South Carolina, and Texas.

North Central: Illinois, Indiana, Iowa, Ohio, Michigan, Minnesota, Missouri, Nebraska, South Dakota, and Wisconsin.

Western: Arizona, California, Colorado, Idaho, Kansas, Montana, Nevada, New Mexico, North Dakota, Oregon, Utah, Washington, and Wyoming.

The regional offices formulate and recommend programs adapted to the needs of the States of the region and coordinate and supervise program activities, keep State Committees informed of the objectives, provisions, and progress of farm programs and issue instructions and operating procedures in connection therewith; conduct meetings and investigations relating to programs, and budget funds and account for expenditures in the region.

The State Agricultural Conservation Committees develop programs adapted to the State conditions and needs and supervise program activities in the counties; keep local committeemen and the general public informed of the objectives, provisions and progress of farm programs in the State.

(d) Special Account for funds transferred for "Local Administration, Sec. 388, Agricultural Adjustment Act of 1938"

(County Agricultural Conservation Associations)

This appropriation account for expenses of the County Agricultural Conservation Associations has been established pursuant to sections 388(b) and 392(a) of the Agricultural Adjustment Act of 1938, as amended (7 U.S.C. 1281-1407) which provide that the Secretary of the Treasury is authorized and directed upon the request of the Secretary to establish one or more separate appropriation accounts into which there shall be transferred from the respective funds available for the purposes of the several acts in connection with which the personnel or other facilities of the Agricultural Adjustment Agency (now the Field Service Branch of the Production and Marketing Administration) are utilized, amounts estimated by the Secretary to be required by local county agricultural conservation associations for carrying out programs formulated under the provisions of the respective acts for which the funds are provided.

Transfers, 1946, as shown below	28,511,911
Transfers, 1947, as shown below	26,073,625
Decrease	2,438,286

STATEMENT OF SOURCES, PURPOSES, AND AMOUNTS OF FUNDS TRANSFERRED

Purposes for which funds are transferred to this account	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
Administrative expenses, Conservation and Use of Agricultural Land Resources for local expenses of agricultural conservation program	$16,300,000	$16,919,505	$20,437,298	+$3,517,793
Sugar Act - for local expenses of sugar program	375,000	375,000	375,000	- -
Crop Insurance Act - for local expenses of crop insurance program	1,264,600	2,273,790	1,995,000	-278,790
Commodity Credit Corporation - for local expenses of commodity loan program	447,280	1,024,423	1,125,000	+100,577
Commodity Credit Corporation: for local expenses of dairy production, beef production, sheep & lamb production and canners' certification programs ..	1,808,333	2,434,180	- -	-2,434,180

STATEMENT OF SOURCES, PURPOSES, AND AMOUNTS OF FUNDS TRANSFERRED - Continued

Purposes for which funds are transferred to this account	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
Salaries and expenses, War Food Administration - for local expenses for special services in connection with emergency food programs	6,312,466	3,345,600	- -	-3,345,600
Reimbursement for services performed	1,439,733	2,238,913	2,238,913	- -
Allotted to Forest Service	134,837	99,500	97,586	1,914
Total	27,812,575	28,511,911	26,073,625	-2,438,286

WORK UNDER THIS ACCOUNT
(Financed by Transfers as shown above and in Budget Schedules)

Section 8(b) of the Soil Conservation and Domestic Allotment Act, as amended, requires that the Secretary of Agriculture designate local administrative areas and provides that cooperating producers in those areas elect local and county committeemen from their own number for terms of one year.

The county agricultural conservation associations provide a democratic institution for carrying out farm programs where direct contact with the farmer is necessary. The purpose of the county associations is to "cooperate with the Secretary of Agriculture in carrying out the provisions of various farm legislative measures". This arrangement results in a partnership between the Government and farm groups.

The county association setup provides a system whereby farmers, through elected county committees, actually administer the program. The members of the county committees are chosen by delegates who are elected in the various communities.

Because conservation needs vary widely in different localities, the committeemen of a particular area are in a position to know best the needs for that area. The fact that the committeeman is a farmer and a member of the community, is conducive to freer discussions and mutual understanding of varied problems between the farmer and the committeeman.

(e) Salaries and Expenses, Agricultural Adjustment Administration

This Budget schedule reflects the allotments and transfers to other agencies of the Department from the unobligated balance of the sum of $100,000,000 appropriated in accordance with the provisions of Section 12(a), title I, of the Act of May 12, 1933. Under authority contained in the Agricultural Appropriation Act, allotments and transfers are made from this fund for International Production Control Committees (OFAR), and to the Bureau of Animal Industry for "Marketing Agreements, hog-cholera virus and serum". Detailed schedules of obligations for these two items appear in the Budget under the titles of the respective agencies.

(f) Sugar Act

Appropriation Act, 1946		$48,446,000
Balance of 1945 appropriation available in 1946		19,491
Total available, 1946		48,465,491
Budget estimate, 1947		55,000,000
Change for 1947:		
Overtime decrease	-14,869	
Increase	+6,549,378 *	+6,534,509

* Represents change in total available funds. Comparable change in direct appropriation is $6,568,869 which includes $19,491 available in 1946 carried over from 1945, and which is not estimated to be available in 1947.

PROJECT STATEMENT

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
1. Conditional payments to sugar producers	$51,324,954	$47,281,964	$53,832,686	+$6,550,722 (1)
2. Expenses of county agricultural associations	375,000	375,000	375,000	- -
3. Administrative expenses, Production and Marketing Administration	111,625	148,985	146,220	-2,765 (2)
4. Administrative expenses Sec. 392, Agricultural Adjustment Act of 1938 (excludes overtime cost of $84,199 in 1945 and $12,154 in 1946)	540,801	607,714	612,809	+5,095 (3)
5. Overtime pay	101,296	14,869	- -	-14,869
Allotted to International Production Control Committees	4,000	4,000	4,000	- -
Transferred to:				
"Salaries and expenses: Division of Disbursement", Treasury Department	+7,296	+7,629	+7,002	-627 (4)
"Printing and binding, Division of Disbursement", Treasury Department	+149	+149	+149	- -

Project	1945	1946 (estimated)	1947 (estimated)	Increase or decrease
Transferred to:				
"Salaries and expenses: Office of the Treasurer of the United States"	- -	+$346	+$334	-$12 (4)
"Printing and binding, Office of the Treasurer of the United States"	- -	+50	+50	- -
"Administration of Sugar Act (Transfer to General Accounting Office)	+$25,585	+24,785	+21,750	-$3,035 (4)
Covered into Treasury as miscellaneous receipts, Public Law 529	+6	- -	- -	- -
Total available	52,490,712	48,465,491	55,000,000	+6,534,509
1945 balance available in 1946	+19,491	-19,491	- -	
Total estimate or appropriation	52,510,203	48,446,000	55,000,000	

INCREASES OR DECREASES

The net increase of $6,534,509 in this item for 1947 consists of the $14,869 decrease for overtime, and the following:

(1) An increase of $6,550,722 under the project "Conditional payments to sugar producers" to provide funds for anticipated conditional payments to sugar producers in connection with the 1946 sugar crop.

Objective: To carry out the provisions of the Sugar Act of 1937 relating to conditional payments.

The Problem and its Significance: Difficulties in obtaining an assured supply of labor, competition of other crops requiring less labor (beans, potatoes, and so forth), coupled with extreme drought or frost damage in some areas, have resulted in a decline in total sugar production during the war years. This decline in production has been the chief wartime problem relating to domestic sugar production. Because of the growing demand for sugar and the efforts being made to encourage increased production, there is anticipated, particularly in beet sugar, an increased production of about 200,000 short tons, raw value.

	Crop Year				
	1942	1943	1944	1945 (Est.)	1946
	(In 1,000 Short Tons Raw Value)				
Continental Beet Area	1,726	1,004	1,050	1,400	1,500
Continental Cane Area	460	521	440	525	550
Hawaii	870	886	885	885	900
Puerto Rico	1,039	725	975	1,000	1,050
Virgin Islands	2	4	5	6	6
Total	4,097	3,140	3,355	3,816	4,006

Under the sugar program basic rates to producers are fixed in the statute. Small producers receive 80 cents per 100 pounds of recoverable sugar. Under a graduated scale in the Act itself, the larger producers receive less. Changes from year to year in the amount of funds necessary to carry out this part of the Act reflect estimated production changes.

(2) A net decrease of $2,765 in the project "Administrative expenses, Production and Marketing Administration" composed of:

(a) An increase of $1,235 for placing on a full year basis in 1947, within-grade salary advancements which are estimated to be in effect for only a part of the fiscal year 1946.

(b) A decrease of $4,000 due to the non-recurrence in 1947 of a cooperative study with the University of Louisiana to determine the amount of trash in Louisiana sugarcane.

(3) An increase of $5,095 in the anticipated transfer to "Administrative expenses, Sec. 392, Agricultural Adjustment Act of 1938" for placing on a full year basis in 1947, within-grade salary advancements which are estimated to be in effect for only a part of the fiscal year 1946.

(4) A decrease of $3,674 in transfers to the Division of Disbursement, Treasury Department; Office of the Treasurer of the United States; and General Accounting Office for services rendered in connection with the program.

CHANGES IN LANGUAGE

The estimates propose that, following the usual language appropriating funds for Sugar Act payments, the following proviso be added:

> Provided, however, That none of the funds appropriated under this head shall be used for payments in amounts in excess of those determined by the Secretary to be necessary to provide returns to producers equivalent to those contemplated under the 1946 support payment programs approved by the Stabilization Administrator.

This proviso is designed to protect the United States Treasury in the event that Federal price control authority terminates on June 30, 1946 and returns to producers should increase beyond the level contemplated by the 1946 price support payment program.

Although Title III of the Sugar Act of 1937 (conditional payment provisions) may be suspended by Presidential Proclamation upon recommendation of the Secretary of Agriculture, it must be suspended as a whole. There is no provision to terminate the authority with regard to payments in specific areas of production, to certain groups of producers, or to a partial extent. Payments at the present statutory rates would not be essential if prices for sugar beets and sugarcane without these payments were as high as those assured growers for 1946 crops under the incentive programs, nor would payments at the full rate be necessary if market returns were close to the level contemplated under the approved programs. Furthermore, because of the wide range in the time of harvesting the crops and marketing the sugar produced therefrom, it would be more equitable to compute payments at varying rates giving recognition to varied levels of income which might result from removal of control of prices. Under the additional language proposed, the principle of reduction of government payments under appropriate circumstances would apply to Sugar Act payments, just as it now applies to price support payments under Commodity Credit Corporation contracts.

Growers may contend that publication in the Federal Register of determinations regarding the conditions to be met by growers with respect to fair and reasonable prices, wage rates, and farming practices constitutes a commitment to complete payments in full. In line with customary procedure, early announcements regarding these conditions for payment will be expected by growers, particularly those in certain districts where considerable work on the 1946 crop will be done this year and deferment of these determinations will not be possible. However, it is expected that in determing these requirements, consideration will be given to the level of prices for sugar beets and sugarcane anticipated under existing programs and the actual additional cost of compliance, if any, will not be significant.

WORK UNDER THIS APPROPRIATION

Objective: The Sugar Act was originally enacted on September 1, 1937, for a three year period and was renewed since then on several occasions with amendments, so that it does not terminate until December 31, 1946. It has for its objectives:

I. The establishment of quotas and allotments regulating the supply of sugar available for marketing in the continental United States from all sugar-producing areas supplying the United States market. With the elimination of world and United States surpluses of sugar during the war and the development of shortages, the quota provisions of the Act have been in suspense by Presidential proclamation since April 13, 1942, and in recent years there have been no governmental restrictions on production of sugar, either in the continental areas of the United States or in Puerto Rico, Hawaii, Virgin Islands, or other offshore areas.

II. The making of the payments to agricultural producers, required by the Act, is conditioned upon:

(a) The elimination of hired child labor;
(b) Payment of fair and equitable wages to field laborers;
(c) In the case of processor-growers, the payment of fair prices to other growers from whom they purchase sugar beets and sugarcane;
(d) The carrying out of approved farming practices for preserving and improving the fertility of the soil and for preventing soil erosion; and
(e) Adjustment of the production of sugar beets and sugarcane on each farm to the amount required to provide that farm's proportionate share of the corresponding sugar market quota when surpluses exist and quotas are in effect.

Under the Act the rates of payment to producers are fixed at a basic rate of 80 cents per 100 pounds of recoverable sugar. Under the Act the small producers receive this basic rate of payment while the larger producers receive less per 100 pounds under a graduated scale. The payments made from year to year vary directly with the production of sugar.

III. The making of surveys, investigations, and recommendations to accomplish the purposes of the Act as related to

(a) The terms and conditions of contracts between the producers and processors of sugar beets and sugarcane, and
(b) The terms and conditions of contracts between laborers and producers of sugar beets and sugarcane.

The Problem and its Significance: At present the principal problem relating to domestic sugar is to prevent reduced production resulting from wartime conditions such as shortages of manpower and materials. The Sugar Act program of conditional payments to producers supplemented by support payments of Commodity Credit Corporation under its programs, are essential to maintain production as long as price ceilings are in effect. The program provides the only mechanism which it has been possible to devise to protect the agricultural laborers engaged in producing sugarcane and sugar beets, prevent the hiring of child labor and provide protection to growers with respect to prices paid by processors for sugar beets or sugarcane purchased from growers.

Plan of Work: Information is developed through investigations and public hearings which enables the Secretary of Agriculture to determine fair and reasonable prices for sugar crops and fair wage rates for those persons engaged in planting and harvesting. These conditions must be met in order to qualify producers for payment under the Sugar Act.

Official sugar statistics form the basis for the execution of the payment program. Statistical data are compiled for sugar beet and sugarcane production. Investigations are also conducted for the purpose of formulating standards.

Revenue: Pursuant to Title IV of the Sugar Act excise taxes were collected amounting to $68,778,910 during the fiscal year 1944; $73,293,966 during the fiscal year 1945; and, it is estimated that $73,000,000 will be collected during the fiscal year 1946. The appropriation for the fiscal year 1944 was $63,883,060; for 1945, $52,510,203, and for 1946, $48,446,000.

Progress and Examples of Current Programs:

Sugar Production and Payments to Producers
by Crop Years *

Area of Production	1942 Production 1,000 short tons	1942 Payments	1943 Production 1,000 short tons	1943 Payments	1944 Production 1,000 short tons	1944 Payments	1945 (estimated) Production 1,000 short tons	1945 (estimated) Payments
Continental Beet Area	1,726	$29,841,000	1,004	$17,610,000	1,050	$19,155,400	1,400	$23,545,131
Continental Cane Area	460	7,090,000	521	7,412,000	440	6,740,000	525	7,500,000
Hawaii ...	870	8,147,000	886	8,251,000	885	8,200,000	885	8,250,000
Puerto Rico	1,039	13,104,000	725	11,928,000	975	12,100,000	1,000	12,400,000
Virgin Islands..	2	26,322	4	56,232	5	75,000	6	96,000
Total ..	4,097	58,208,322	3,140	45,257,232	3,355	46,270,400	3,816	51,791,131

* The continental beet sugar crop is planted in the spring (except in California where plantings are earlier), harvested in the fall, and the sugar produced from that crop is marketed mainly in the calendar year following its planting and harvesting. The continental cane includes both Louisiana and Florida. In Louisiana the harvesting of the cane takes place mainly in the last quarter of the calendar year, and most of the sugar of the crop produced in any calendar year is marketed in that year. The Florida sugarcane harvest extends from November of one year into May of the next year. Harvesting and marketing of sugar proceed simultaneously in Hawaii all year round. In the case of Puerto Rico it has become customary under the Sugar Act to identify the crop by the year in which the cane has matured. Thus the 1944 crop is the crop maturing during 1944 but from which the sugar is harvested during the calendar year 1945.

Fair Price Determination Issued

Fair price determinations issued during the year covered the 1944 sugarcane crop in Louisiana and Florida, the 1944 crop in the United States sugar beet areas, the 1944-45 crop of Puerto Rican sugarcane, the 1945 crop of Hawaiian sugarcane and the 1945 crop of Virgin Islands sugarcane. These determinations establish the price which producers, who are also processors, must pay for cane or beets bought by them from other growers in order to qualify for payments under the sugar program.

Minimum Wages Established for Field Workers

"Fair and reasonable" wage rates were established during the year for all the domestic sugar producing areas. As in 1944, due to competition for the short supply of labor, growers in most areas were compelled to pay wages higher than those required for compliance under the Act. Accordingly, instead of serving as prevailing wages, as in pre-war years, the prescribed rates provided a protective minimum and served as a stabilizing factor since the announced rates were based generally on standards used in other years.

Since the price to be received by growers for the 1945 crop of sugar beets was not expected to differ from that received for the 1944 crop, only minor adjustments were made in the 1945 wage determination. These adjustments were made to meet certain problems raised at public hearings and those of labor recruitment. Many areas will put voluntary bonus systems into effect in 1945, which will result in substantial increases in earnings of laborers. The prevailing wages in many parts of the beet area, with or without a bonus, are somewhat higher than the minimum rates required by the determination.

Substantial wage increases had taken place in Louisiana in 1943, and no further increases were made in the 1944 harvesting wage determination for that area. While the income of producers was further augmented by increased Commodity Credit Corporation subsidy payments, the necessity for higher wages diminished by virtue of an easing of the labor problem and the use of mechanical harvesting equipment. Consequently, the wages established in the 1944 harvesting determination more nearly reflected the pre-war wage-income relationship. Cultivation wage rates for Louisiana in 1945 were increased 13 percent over 1944, due to an increased subsidy payment by the Commodity Credit Corporation.

During the past two crops, Florida growers were compelled by a severe labor shortage to pay wages considerably higher than the minimum rates provided in the determinations. The 1944 harvesting determination for this area established day wages at a level about 17 percent over the rates effective for 1942 and made piece rates about 10 percent higher than for 1942, the last year for which specific rates were determined. Other changes included a simplification of the wage scale, which now more adequately meets the requirements of this area. No wartime subsidy payment was made to Florida growers for the

1944 crop. Cultivation rates for Florida for 1945 were increased by 20 percent, compared with 1944, such increase being the result of a Commodity Credit Corporation subsidy payment made for the first time in that area on the 1945 crop.

In view of the fact that a thorough readjustment of the basic wage rates in Puerto Rico was made in 1944, and since the determination included a provision for automatic wage increases in the event of price increases, no changes were made in the 1945 wage determination for this area. Support payments by the Commodity Credit Corporation for growers were shared with laborers, as in the previous year.

The 1945 determination for Hawaii excluded many of the detailed provisions contained in former determination, and established a simple hourly wage per worker at a level about 15 percent above the effective 1944 rate. In addition to receiving the required minimum hourly rate, the laborers are assured of a voluntary bonus payment by producers based on any increase in the price of sugar not taken into consideration in the basic-wage income relationship.

In the Virgin Islands cane workers' earnings were improved by increasing the required wage rates for 1945 about 18 percent.

Soil Conserving Practices

The farming practices required of sugar beet growers and sugarcane growers in Louisiana, Hawaii and the Virgin Islands as a condition for payment under the Sugar Act were identical with those for the preceding year. On the recommendation of the Florida State Agricultural Conservation Committee, the practices of turning under sorghum as a green manure and as a cover crop were added for 1945. For Puerto Rico, the farming practices specified for 1945 represented an increase in the fertilizer requirements which were in effect for the 1944 crop. With improvement in shipping facilities and increased supplies of fertilizer, the requirements were returned to the pre-war levels contained in the 1941-1942 determinations.

Proportionate Shares

The determinations of proportionate shares for sugar beet and sugarcane growers for the 1945 crop continued in effect the wartime policy of unlimited production.